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Comhairle Contae County Council

Final Strategic Environmental Assessment

Non-Technical Summary

SEA Environmental Report

Appendix II – Non-Technical Summary

FOR THE

Dún Laoghaire-Rathdown County Development Plan 2022-2028

for: **Dún Laoghaire-Rathdown County Council**

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Section 1 Introduction and Terms of Reference

This is the Non-Technical Summary of the Environmental Report for the Dún Laoghaire-Rathdown County Development Plan 2022-2028 (hereafter referred to as 'the Plan'). The purpose of the Environmental Report is to provide a clear understanding of the likely environmental consequences of decisions regarding the adoption and implementation of the Plan. The Environmental Report has been prepared as part of a Strategic Environmental Assessment (SEA) process for the Plan.

What is SEA?

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed plan, or other strategic action, in order to ensure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic, social and other considerations.

Why is SEA needed? The Benefits

SEA is the planning authority's and the public's guide to what are generally the best areas for development in the County.

SEA enables the planning authority to direct development towards robust, well-serviced and connected areas in the County – thereby facilitating the general avoidance of incompatible areas in the most sensitive, least well-serviced and least well-connected areas.

SEA provides greater certainty to the public and to developers. Plans are more likely to be adopted without delays or challenges and planning applications are more likely to be granted permission. Environmental mitigation is more likely to cost less.

An overlay of environmental sensitivities is shown on Figure 1.1.

The overlay mapping shows that environmental sensitivities are not evenly distributed throughout the County. Most of the County is identified as having low to moderate levels of sensitivity.

The most sensitive areas in the County include:

- Parts of the rural areas in the south west of the County, on account of the High Amenity Area designation, archaeological heritage sensitives, areas of extreme and high groundwater vulnerability and European Site ecological designations along the borders with South Dublin and Wicklow County Councils;
- Parts of the coastline and adjacent coastal areas, on account of European Site and proposed Natural Heritage Area ecological designations, Protected Views and Prospects, extreme groundwater vulnerability and coastal flood risk;
- Certain locations and areas within the existing built-up footprint of the County, on account of cultural heritage designations, including entries to the Record of Monuments and Places, Entries to the Record of Protected Structures and Architectural Conservation Areas; and
- Certain areas that are adjacent to streams and rivers, on account of flood risk.

The Plan directs incompatible development away from the most sensitive areas in the County and focuses on directing: compact, sustainable development within and adjacent to the existing built-up footprint; and sustainable development elsewhere, including in the rural area of the County. Development of areas within and adjacent to the existing built-up footprint, which are generally more robust, better serviced and better connected, will contribute towards environmental protection and sustainable development, including climate mitigation and adaptation.

Compact development can be accompanied by placemaking initiatives to enable the County's settlements to become more desirable places to live – so that they can sustainably accommodate new residents and maintain and improve services to existing and future communities.

Compatible sustainable development in the County's sensitive areas is also provided for, subject to various requirements relating to environmental protection and management being met.

How does the SEA work?

All of the main environmental issues in the area were assembled and considered by the team who prepared the Plan. This helped them to devise a Plan that contributes towards the protection and management of environmental sensitivities. It also helped to identify wherever potential conflicts between the Plan and the environment exist and enabled these conflicts to be mitigated.

The SEA was scoped in consultation with designated environmental authorities.

What is included in the Environmental Report that accompanies the Plan?

- A description of the environment and the key environmental issues;
- A description and assessment of alternatives for the Plan;
- An assessment of the provisions of the Plan; and,
- Mitigation measures, which will avoid/reduce the environmental effects of implementing the Plan and will contribute towards compliance with important environmental protection legislation.

Difficulties Encountered during the SEA process

No significant difficulties have been encountered during the undertaking of the assessment.

There is a data gap relating to WFD surface water status data. There are a number of waterbodies within the Plan area with overall status currently not assigned to them and the term “unassigned status” applies in respect of these waterbodies. The SEA ensured that the Plan contains measures that will contribute towards the maintenance and improvement of status of all water bodies within the zone of influence.

What happens at the end of the process?

An SEA Statement is prepared which summarises, inter alia, how environmental considerations have been integrated into the Plan.

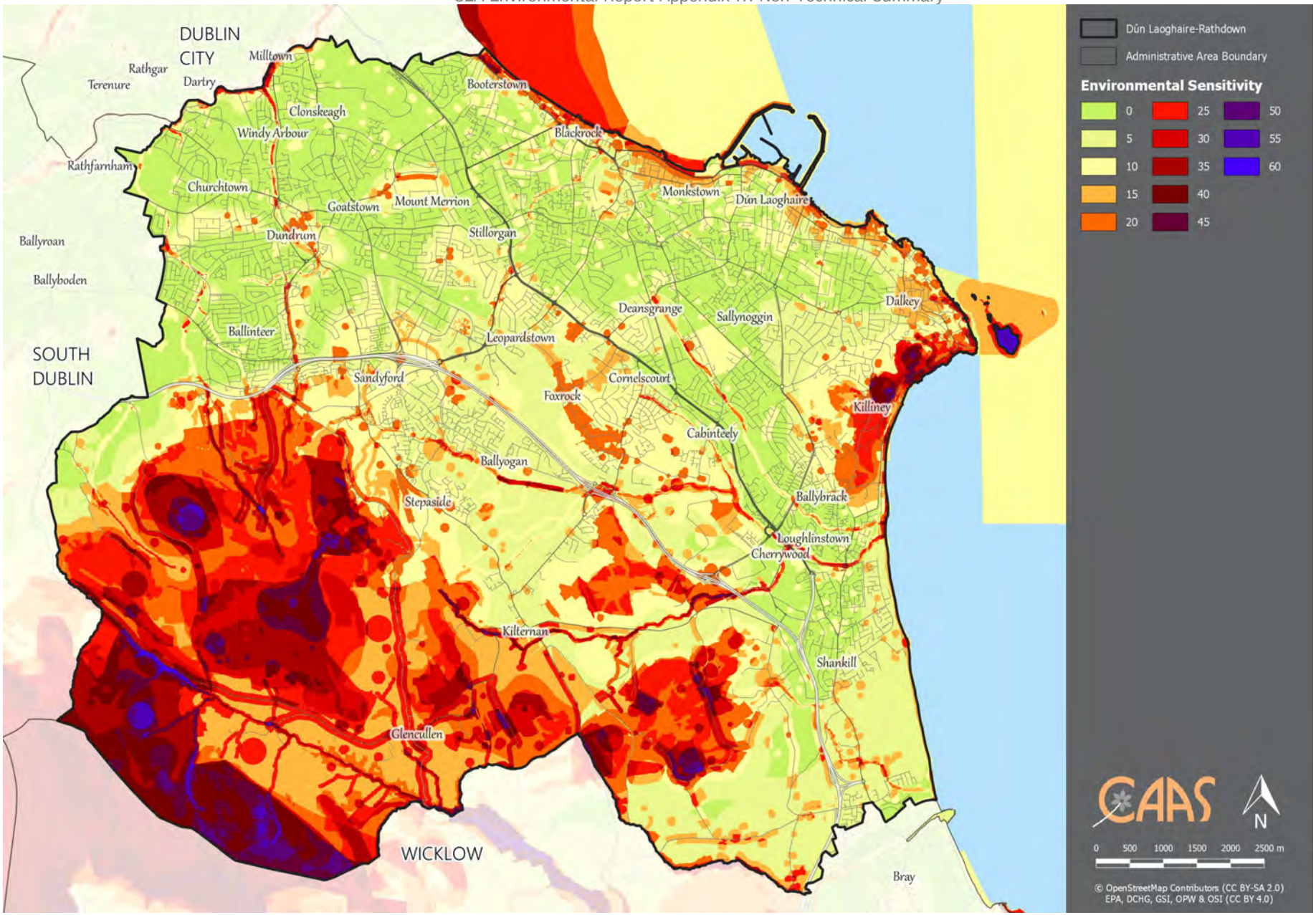

Figure 1.1 Environmental Sensitivities Map

Section 2 The Plan

2.1 Introduction

The Dún Laoghaire-Rathdown County Development Plan is a land use plan and overall strategy for the proper planning and sustainable development of the functional area of County Dún Laoghaire-Rathdown over the six-year period 2022-2028. Not later than four years after the adoption of the Plan, the Council is required to review it and commence the preparation of a new Plan.

2.2 Content of the Plan

The Plan includes a Written Statement, that provides the development policies, Core Strategy and mandatory and discretionary objectives for different policy areas addressed by the Development Plan. The Written Statement is divided into 15 separate chapters setting out various policies and objectives under the headings of:

- Chapter 1: Introduction, Vision and Context
- Chapter 2: Core Strategy
- Chapter 3: Climate Action
- Chapter 4: Neighbourhoods, People, Place and Homes
- Chapter 5: Transport and Mobility
- Chapter 6: Enterprise and Employment
- Chapter 7: Towns, Villages and Retail Development
- Chapter 8: Green Infrastructure and Biodiversity
- Chapter 9: Open Space and Recreation
- Chapter 10: Environmental Infrastructure
- Chapter 11: Heritage and Conservation
- Chapter 12: Development Management
- Chapter 13: Land Use Zoning Objectives
- Chapter 14: Specific Local Objectives
- Chapter 15: Implementation, Monitoring and Evaluation

The Written Statement is accompanied by Land Use Zoning Maps, this SEA Environmental Report, a Natura Impact Report, a Strategic Flood Risk Assessment and other supporting appendices.

2.3 Overall Vision and Aims

The Vision of the Plan is: *'to embrace inclusiveness, champion quality of life through healthy placemaking, grow and attract a diverse innovative economy and deliver this in a manner that enhances our environment for future generations.'*

To deliver on the Development Plan Vision over the lifetime of the Plan there are a number of key cross cutting and interrelated themes or Strategic County Outcomes which underpin the Plan as follows:

1. Creation of a climate resilient County;
2. Creation of a compact and connected County;
3. Creation of a liveable network of towns and villages;
4. Creation of an inclusive and healthy County; and
5. Creation of a vibrant economic County.

2.4 Strategic work undertaken by the Council to ensure contribution towards environmental protection and sustainable development

Far in advance of both the submission of the Chief Executive's Draft Plan to the Elected Members for approval and the placing of the Draft Plan on public display, Dún Laoghaire-Rathdown County Council undertook various background work in order to inform the preparation of the Plan.

The findings of this strategic work have been integrated into the Plan and will contribute towards both environmental protection and management and sustainable development within the County.

Strategic work undertaken by the Council includes background work in relation to Plan Strategies and other provisions for a variety of sectors, including:

- Climate Action;
- Transport and Mobility;
- Green Infrastructure;
- Infrastructure Assessment;
- Housing Strategy and Interim Housing Needs
- Demand Assessment;
- Building Height Strategy;
- Waste Management Guidelines;
- Green Roofs;
- Stormwater Management Policy
- Interim to Dun Laoghaire Urban Framework Plan;
- Background Paper for the SLR for Old Connaught;
- Landscape Character Areas;
- Wind Energy Strategy;
- Dún Laoghaire Urban Framework Plan;
- Sandyford Urban Framework; and
- Record of Protected Structures.

The undertaking of this SEA process and associated Appropriate Assessment and Strategic Flood Risk Assessment processes were part of this strategic work and contributed towards the integration of environmental considerations into individual Plan provisions as detailed in Section 6 of this report.

2.5 Relationship with other relevant Plans and Programmes

The Plan sits within a hierarchy of statutory documents setting out public policy for, among other things, land use planning, infrastructure, sustainable development, tourism, environmental protection and environmental management. The Plan must comply with relevant higher-level strategic actions and will, in turn, guide lower level strategic actions.

The National Planning Framework (NPF) sets out Ireland's planning policy direction up to 2040. The NPF is to be implemented through Regional Spatial and Economic Strategies (RSESs) and lower tier Development Plans and Local Area Plans. The RSES for the Eastern and Midland Region sets out objectives for land use planning, tourism, infrastructure, sustainable development, environmental protection and environmental management that have been subject to environmental assessment and must be implemented through the County Development Plan.

As required by the Planning and Development Act 2000, as amended, the County Development Plan is consistent with and conforms with national and regional policies, plans and programmes, including the NPF and the RSES for the Eastern and Midland Region. The County Development Plan may, in turn, guide lower level strategic actions, such as the Local Area Plans that will be subject to their own lower-tier environmental assessments.

In order to be realised, projects included in the County Development Plan (in a similar way to other projects from any other sector) will have to comply, as relevant, with various legislation, policies, plans and programmes (including requirements for lower-tier Appropriate Assessment, Environmental Impact Assessment and other licencing requirements as appropriate) that form the statutory decision-making and consent-granting framework.

Section 3 The Environmental Baseline

3.1 Introduction

The summary of the environmental baseline of the County is described in this section. This baseline together with the Strategic Environmental Objectives, which are identified in Section 1.1, is used in order to identify, describe and evaluate the likely significant environmental effects of implementing the Plan and in order to determine appropriate monitoring measures.

3.2 Likely Evolution of the Environment in the Absence of the Plan

In the absence of a new Plan it is uncertain how permission for new development would be applied for and considered.

The 2016-2022 Plan has contributed towards environmental protection within the County. If the 2016-2022 Plan was to expire and not be replaced by the 2022-2028 Plan, this would result in a deterioration of the County's planning and environmental protection framework. Although higher level environmental protection objectives – such as those of various EU Directives and transposing Irish Regulations – would still apply, the deterioration of this framework would mean that new development would be less coordinated and controlled. As a result, there would be an increased likelihood in the extent, magnitude and frequency of adverse effects on all environmental components occurring, including:

- Arising from both construction and operation of development and associated infrastructure:
- Loss of/damage to biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species, listed species, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna;
- Habitat loss, fragmentation and deterioration, including patch size and edge effects; and
- Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species such as birds and bats.
- Potential adverse effects arising from flood events.
- Potential interactions if effects arising from environmental vectors.
- Potential adverse effects on the hydrogeological and ecological function of the soil resource, including as a result of development on contaminated lands.
- Potential for riverbank and coastal erosion.
- Potential adverse effects upon the status of water bodies and entries to the WFD Register of Protected Areas (ecological and human value), arising from changes in quality, flow and/or morphology.
- Increase in flood risk and associated effects associated with flood events.
- Failure to provide adequate and appropriate waste water treatment (water services infrastructure and capacity ensures the mitigation of potential conflicts).
- Failure to adequately treat surface water run-off that is discharged to water bodies (water services infrastructure and capacity ensures the mitigation of potential conflicts).
- Failure to comply with drinking water regulations and serve new development with adequate drinking water (water services infrastructure and capacity ensures the mitigation of potential conflicts).
- Increases in waste levels.
- Potential impacts upon public assets and infrastructure.
- Potential interactions at local level between agricultural waste and soil, water, biodiversity and human health - including nitrogen deposition as a result of agricultural activities. However, this is likely to be a less significant issue at County level due to low levels of intensive agriculture.
- Potential conflict between development under the Plan and aiming to reduce carbon emissions in line with local, national and European environmental objectives.
- Potential conflicts between transport emissions, including those from cars, and air quality.
- Potential conflicts between increased frequency of noise emissions and protection of sensitive receptors.
- Potential conflicts with climate adaptation measures including those relating to flood risk management.
- Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities.
- Occurrence of adverse visual impacts and conflicts with the appropriate protection of designations relating to the landscape.

3.3 Biodiversity and Flora and Fauna

Green space, which makes up a large part of the southern portion of the County, consists of a variety of habitats including corridors that 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, Marlay Park, Deerpark, Cabinteely Park, Shanganagh Park and a number of other open spaces within and adjacent to the County's existing built footprint.

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 also be present. 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 Dalkey, 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. Coastal habitats in Ireland provide ecosystem services including biodiversity, recreation, coastal protection and food provision. Coastal squeeze describes the impact on coastal habitats from the combined pressures of climate change at sea and human activities on land. Climate change is predicted to cause sea level rise and increased storminess, which in turn has the potential to lead to greater frequency of coastal flooding and erosion events, and eventually to landward movement of coastlines and coastal habitats.

Dalkey Islands comprise the uninhabited islands of Dalkey Island, Lamb Island and Maidens' Rock. The islands contain important ecological, archaeological, architectural, and cultural heritage. The underlying rock is granite with rough terrain with rock outcrops, semi-natural grasslands, dense bracken framed by a rocky shoreline with low granite cliffs[1]. The Islands are a designated SPA (Dalkey Islands SPA) and SAC (Rockabill to Dalkey Island SAC) and form part of the Dalkey Coastal Zone and Killiney Hill pNHA.

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.

Marshes are found on level ground near slow-flowing river banks and in other places where mineral or shallow peaty soils are waterlogged, and where the water table is close to ground level for most of the year and tend to be comparatively species-rich especially with herbs. Booterstown Marsh in the north-east of the Plan area is the only remaining area of saltmarsh in Dún-Laoghaire-Rathdown. The marsh is an important habitat for a range of species including birds, fish, invertebrates and rare plants It is also of international importance as a roosting and feeding area for waders and wildfowl. [2]

The zone of influence of the Plan beyond the County area with respect to impacts upon ecology via surface waters upon ecological resources – including designated ecology – can be estimated to be areas within 15 km of the County boundary and all downstream areas of catchments which drain the County

[1] *The Dalkey Islands Conservation Plan 2014-2024*
[2] *Treasuring our Wildlife - Dún Laoghaire-Rathdown Biodiversity Plan 2009-2013.*

Designated sites within and adjacent to the County include Special Areas of Conservation[3] (SACs) and Special Protection Areas[4] (SPAs). These are mapped on Figure 3.1. Other ecological designations occur within and adjacent to the County and these are detailed in the main SEA Environmental Report.

Existing Problems
Ireland's Article 17 report on the Status of EU Protected Habitats and Species in Ireland (DCHG, 2019) identifies various Irish, EU-protected habitats and species to be of unfavourable status and many to be still declining, although it also identifies that a range of positive actions are underway. Categories for pressures and threats on Ireland's habitats and species identified by the report comprise:

- Agriculture;
- Forestry;
- Extraction of resources (minerals, peat, non-renewable energy resources);
- Energy production processes and related infrastructure development;
- Development and operation of transport systems;
- Development, construction and use of residential, commercial, industrial and recreational infrastructure and areas;
- Extraction and cultivation of biological living resources (other than agriculture and forestry);
- Military action, public safety measures, and other human intrusions;
- Alien and problematic species;
- Mixed source pollution;
- Human-induced changes in water regimes;
- Natural processes (excluding catastrophes and processes induced by human activity or climate change);
- Geological events, natural catastrophes;
- Climate change; and
- Unknown pressures, no pressures and pressures from outside the Member State.

The Plan includes measures to contribute towards the protection of biodiversity and flora and fauna and associated ecosystem services.

Previous changes in land uses arising from human development have resulted in a loss of biodiversity and flora and fauna however, legislative objectives governing biodiversity and fauna were not identified as being conflicted with.

3.4 Population and Human Health

In the 2016 Census the total population of County Dún Laoghaire-Rathdown was identified as being of 218,018 persons, an increase in total population in the County by c. 11% (c. 24,000 persons) over a 10-year period from 2006.

The new population provided for in the Plan will interact with various environmental components. Potential interactions include:

- Increase in demand for wastewater treatment at the municipal level;
- Recreational and development pressure on habitats and landscapes;
- Increase in demand for water supply and associated potential impact of water abstraction from the rivers;
- Potential interactions in flood-sensitive areas; and
- Potential effects on water quality

Human health has the potential to be impacted upon by environmental vectors (i.e. environmental components such as air, water or soil through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings). Hazards or nuisances to human health can arise as a result of exposure to these vectors arising from incompatible adjacent land uses for example. These factors have been considered with regard to the description of: the baseline of each environmental component; and the identification and evaluation of the likely significant environmental effects of implementing the Plan.

Existing Problems
There is historic and predictive evidence of flooding in various locations across the County (see information on Strategic Flood Risk Assessment at Section 3.6).

[3] SACs have been selected for protection under the European Council Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) due to their conservation value for habitats and species of importance in the European Union. The Habitats Directive seeks to establish Natura 2000, a network of protected areas throughout the EU. It is the responsibility of each member state to designate SACs to protect habitats and species, which, together with the SPAs designated under the 1979 Birds Directive, form Natura 2000.
[4] SPAs have been selected for protection under the 1979 European Council Directive on the Conservation of Wild Birds (79/409/EEC) - referred to as the Birds Directive - due to their conservation value for birds of importance in the EU.

The greatest health risk from radiation in Ireland is caused by radon. The presence of radon gas, a naturally occurring radioactive gas that originates from the decay of uranium in rocks and soils, occurs across the country. It accounts for more than half of the total radiation dose received by the Irish population. As a known carcinogen, in the same category as tobacco smoke and asbestos it is a cause of lung cancer. Exposure to radon for long periods or at high concentrations can lead to lung cancer. The number of homes within the County with radon levels above the reference level is within the normal range experienced in other locations across the country[5].

Information on the status of groundwaters and surface waters is provided under Section 3.6 while information on water services is provided under Section 3.8.

3.5 Soil

Urban soils[6] (mainly in the northern, most built-up parts of the Plan area) and lithosol soils[7] (mainly in the south and south-western parts of the Plan area) are the two most dominant soil types in the County. Other soil types identified include:

- Alluvial soils[8] (in the flood plains of rivers and streams);
- Brown podzols[9] (mainly in the south of the Plan area);
- Luvisols[10] (in the coastal south-east); and
- Brown earths[11] (mainly in the east and south-east of the Plan area).

Peatlands are unique systems comprising of peat soil providing as significant carbon stores and supporting a range of unique species. Active blanket bogs and active raised bogs are considered to be priority habitats, listed on Annex I of the EU Habitats Directive. Peat soils are often indicative of areas that are the most sensitive to development due to ecological sensitivities and impeded drainage issues. The ombrotrophic (rain-fed) peat soils in the south-west of the Plan area are also a subject to ecological designations.

Outcropping rock is identified in a number of upland and coastal locations.

The GSI have a suite of data sources available that would be useful in planning and assessing individual projects with regard to the environmental topic(s) of soil and/or material assets. These include:

- Bedrock mapping;
- Quaternary and Physiographic mapping; and
- National Aquifer and Recharge mapping.

Geological Survey of Ireland coordinates the Irish Geological Heritage Programme, which seeks to identify and select sites of geological interest within each county across the country. The audit of County Geological Sites in Dún Laoghaire-Rathdown was completed in 2014 and identified 12 County Geological Sites[12]. Concentrations of these designations can be found in the upland areas and along the coast.

Given the urban nature of the County and the range of land use activities which have taken place historically, soils have been contaminated in the past. Such contamination has the potential to affect water quality, biodiversity and flora and fauna and human health. Under the Plan (Chapter 12), where brownfield redevelopment is proposed, adequate and appropriate investigations are required to be carried out into the nature and extent of any soil and groundwater contamination and the risks associated with site development work.

[5] Mapping available at http://www.epa.ie/radiation/radonmap
[6] Urban soils are soils which have been disturbed, transported or manipulated by human activity in the urban environment and are often overlain by a non-agricultural, man-made surface layer that has been produced by mixing, filling or by contamination of land surfaces in urban and suburban areas.
[7] Lithosols are shallow non-calcareous soils, commonly overlying hard rock or skeletal and gravelly material. They tend to be stony soils, or with shattered bedrock and are associated with frequent rock outcrops. Their use-range is usually limited to rough grazing.
[8] These are associated with alluvial (clay, silt or sand) river deposits.
[9] Brown podzol soils are characterised by dark brown humus-mineral soil covered with a thin mat of partly decayed leaves.
[10] Luvisol soils are generally fertile, widely used for agriculture and associated with significant accumulation of clay.
[11] Brown earths are well drained mineral soils, associated with high levels of natural fertility.
[12] Geological Survey of Ireland (2014) *The Geological Heritage of Dún Laoghaire-Rathdown. An Audit of County Geological Sites in Dún Laoghaire-Rathdown.*

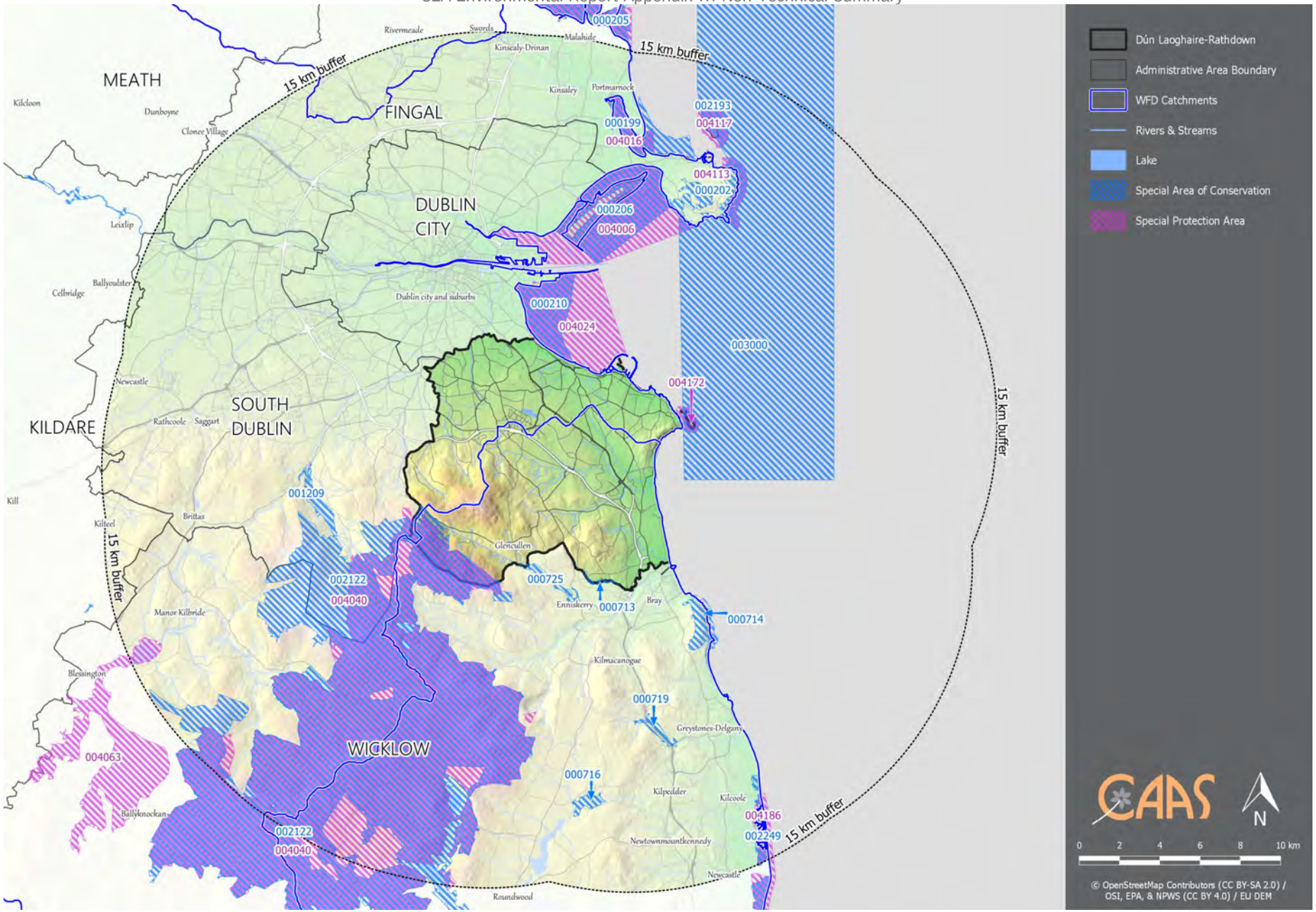

Figure 3.1 European Sites within and adjacent to the County

3.6 Water

Surface and Groundwater

Most of the Plan area is located within the catchment of the Liffey and Dublin Bay (an area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point). The Plan area is also partially drained by the Avoca-Vartry catchment (an area drained by the Rivers Avoca and Vartry and by all streams entering tidal water between Sorrento Point and Kilmichael Point). The main rivers within the Plan area are the Loughlinstown River, the Glencullen River, the Little Dargle River and the River Dodder.

The Water Framework Directive (WFD) defines 'overall surface water status' as the general expression of the status of a body of surface water, determined by the poorer of its ecological status and its chemical status. Thus, in order to achieve 'good surface water status' both the ecological status and the chemical status of a surface water body need to be at least 'good'. The WFD surface water status (2013-2018), for rivers and coastal waters within and surrounding the County is shown on and on Table 3.1.

The WFD status of most of the rivers and streams within the County is classified as *moderate*, *good* and *high*, however a section of the Kill of the Grange Stream is identified as *poor* due to unsatisfactory ecological/biological and/or physio-chemical status. Coastal water bodies the Irish Sea and Dublin Bay, adjacent to the north-east of the County, are currently identified as being of *good* status while the Southwestern Irish Sea - Killiney Bay water body, adjacent to the coastline, is of *high* status. The WFD status (2013-2018) of groundwater underlying the County is mostly identified as being of *good* status.

Significant pressures, those pressures which need to be addressed in order to improve water quality, have been identified for waterbodies that are 'At Risk' of not meeting their water quality objectives under the WFD. Significant pressures for surface water bodies within or adjacent to Dún Laoghaire-Rathdown are identified on Table 3.1. There are various types of pressures identified, such as:

- **Urban run-off pressures** - can include leaking sewers and run-off from paved and unpaved areas and misconnections where private foul connections are connected to storm sewers instead of the foul sewer network.
- **Urban wastewater pressures** - can include direct discharge of nutrients from urban wastewater treatment plants and discharge from combined storm overflows or storm water overflows. Discharges of elevated concentrations of phosphorus, ammonium and nitrogen impact on the ecology of surface waters.
- **Hydromorphological and anthropogenic pressures** are identified together in many instances. Hydromorphological pressures, those on the physical form, condition and processes within a surface water body, that create and maintain habitat, can include: modifications to the physical habitat conditions or the natural functioning of a waterbody which can impact on ecology, caused by dredging and straightening of rivers (channelisation), land drainage or hard infrastructure such as dams, weirs, culverts or other obstructions. Anthropogenic pressures, those that originate in human activities, can include: water abstractions; invasive species; agriculture; use of fertilizers, manures and pesticides; animal husbandry activities; inefficient irrigation practices; deforestation of woods; aquaculture; pollution due to industrial effluents and domestic sewage; and recreational activities.

Table 3.1 WFD River and Coastal Waterbodies Status[13]

Waterbody Name (EPA Identification Code)[14]	Waterbody Type	WFD Surface Waterbody Status (2013 -2018)
Kill of the Grange Stream_010	**River**	**Poor** - due to poor ecological/biological status. This waterbody is identified to be under pressure from **hydromorphological/anthropogenic, urban run-off and urban wastewater sources**
Carrickmines Stream_010	**River**	**Moderate**. This waterbody is identified to be under pressure from **urban run-off sources.**
Dargle_030	**River**	**Moderate**. This waterbody is identified to be under pressure from **urban wastewater sources.**
Dodder_050	**River**	**Moderate**. This waterbody is identified to be under pressure from **hydromorphological, urban run-off and urban wastewater sources.**
Shanganagh_010	**River**	**Moderate**. No pressures identified.
Dargle_040	**River**	**Good**. No pressures identified.
Owenadoher_010	**River**	**Good**. This waterbody is identified to be under pressure from **urban run-off sources.**
Dublin Bay	**Coastal**	**Good**. No pressures identified.
Irish Sea Dublin (HA 09)	**Coastal**	**Good**. No pressures identified.
Glencullen_010	**River**	**High.** No pressures identified.
Southwestern Irish Sea - Killiney Bay (HA10)	**Coastal**	**High.** No pressures identified.

[13] Source: https://gis.epa.ie/EPAMaps/ and https://gis.epa.ie/EPAMaps/Water.

[14] The number at the end of each river water body name indicates where the waterbody is located along the main river channel. For example, the waterbody at the source is coded '_010', the next waterbody downstream is coded '_020' and the final waterbody before the river becomes transitional is '_180'.

Bathing Waters

There are five locations Bathing Waters identified under the Bathing Water Regulations 2008, as amended: Seapoint Beach; Killiney Beach; Sandycove Beach; the 40ft Bathing Area; and White Rock Beach. Seapoint Beach and Killiney Beach were identified under the Regulations in 1998 while White Rock Beach, Sandycove Beach and the 40ft were identified in 2018.

Bathing waters are now classified into four quality categories; *'excellent'*, *'good'*, *'sufficient'*, or *'poor'* with a minimum target of *'sufficient'* required to be achieved for all bathing waters.

The most recent available data from the EPA for 2019[15] shows that locations of designated bathing waters within the Plan area are either classified as *excellent*[16] (at Sea Point; White Rock Beach; and Forty Foot) or *good*[17] (at Killiney and Sandycove Beach).

The bathing water quality at Merrion Strand, which adjoins the County boundary, is currently of *poor* status. One of the main issues identified at Merrion Strand is the impact from two polluted streams which flow onto the beach. These are the Elm Park and Trimlestown Streams, which flow through both Dún Laoghaire-Rathdown and Dublin City Council areas. These streams are polluted by a combination of misconnections, run-off from roads, leaks, spills and overflows from wastewater collection systems. Dublin City Council is investigating ways to improve water quality in these areas.

Flooding

Certain areas across the County are at risk from groundwater, pluvial[18], fluvial[19] estuarial[20] and coastal[21] flooding. Dún Laoghaire-Rathdown is located on the east coast of Ireland, and much of the Plan boundary is subject to flood risk from the Irish Sea. There is historic evidence of flooding in various locations across the Plan area, including along the Dodder River and its tributaries, Dundrum Slang, Little Dargle, Crinken Stream, Shanganagh River, Loughlinstown River, Deansgrange Stream, Carrickmines River, Carysfort/Maritimo Stream and at various locations along the coastline. Figure 3.3 shows predictive Flood Zones A and B[22] for fluvial and coastal flood risk.

Locations within and adjacent to the County that were identified by the Office of Public Works (OPW) in 2012 as requiring detailed assessment of flood risk (Areas for Further Assessment) include Loughlinstown and Bray. Predictive flood risk mapping is now available from the OPW for these areas and other areas along the County's rivers and coastline.

A Strategic Flood Risk Assessment (SFRA), as required by 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' (DEHLG and OPW, 2009), has been undertaken alongside the preparation of the SEA and the preparation of the Plan. This assessment considers available and emerging information on historical and predictive flood risk indicators.

Existing Problems

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

The Plan includes provisions that will contribute towards improvements in the status of waters.

There is an issue with bathing water quality at Merrion Strand, which adjoins the County boundary.

There is historic and predictive evidence of elevated levels of flood risk from fluvial and coastal sources at various locations across the County

[15] EPA Report (2020) on *Bathing Water Quality in Ireland for the year 2019*
[16] The highest, cleanest class
[17] The second highest, second cleanest class
[18] Resulting from high intensity rainfall events where run-off volume exceeds capacity of surface water network.
[19] Watercourse capacity is exceeded or the channel is blocked and excess water spills from the channel onto adjacent floodplains.
[20] A combination of high tide and high river flows prevents water from flowing out to sea causing water levels inland to flood river banks.
[21] Resulting from higher sea levels than normal causing the sea to overflow onto land. Such flooding is influenced by high tide level, storm surges and wave action.
[22] Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding); Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all other areas that are not in zones A or B.

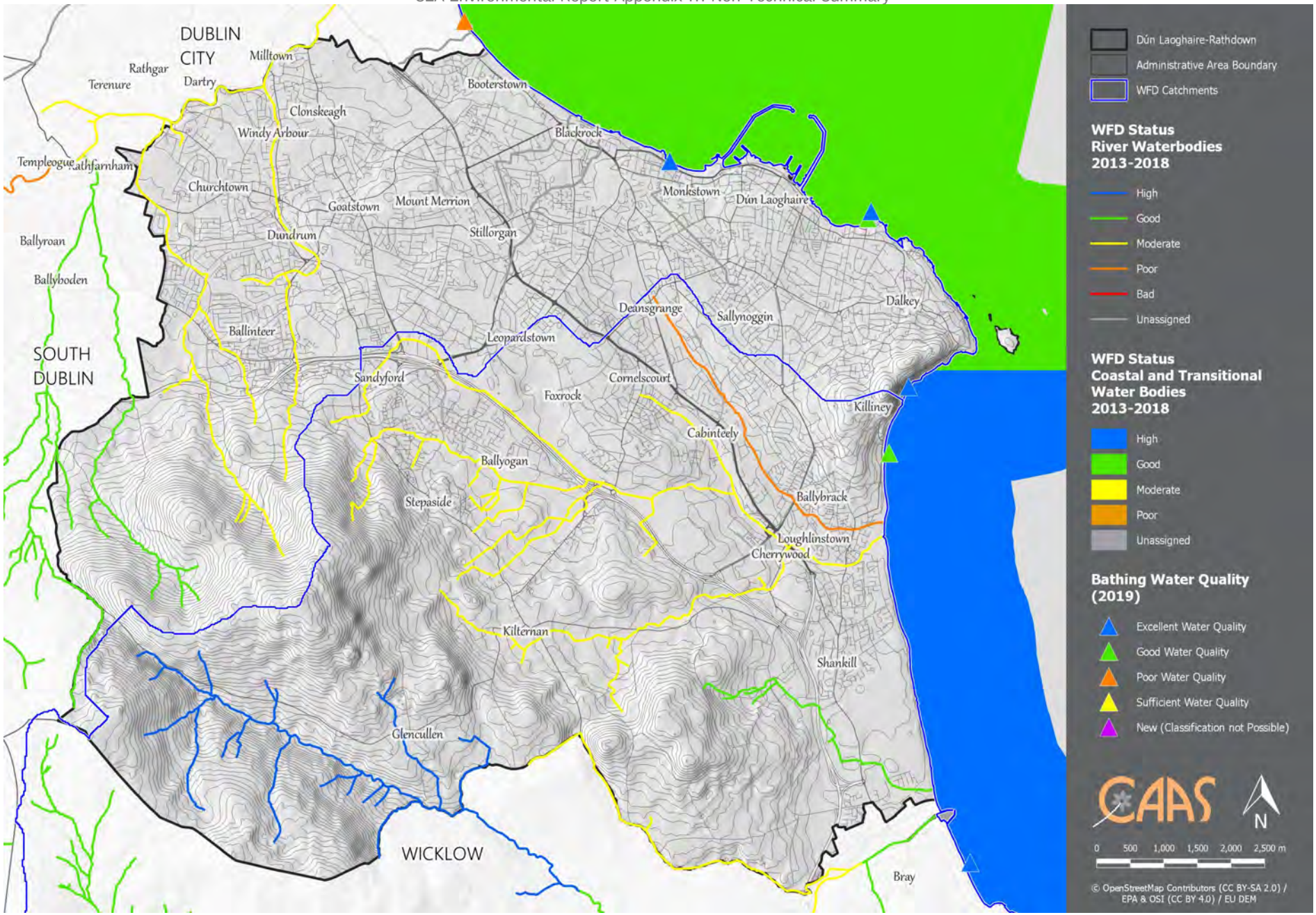

Figure 3.2 WFD Surface Water Status (2013-2018)

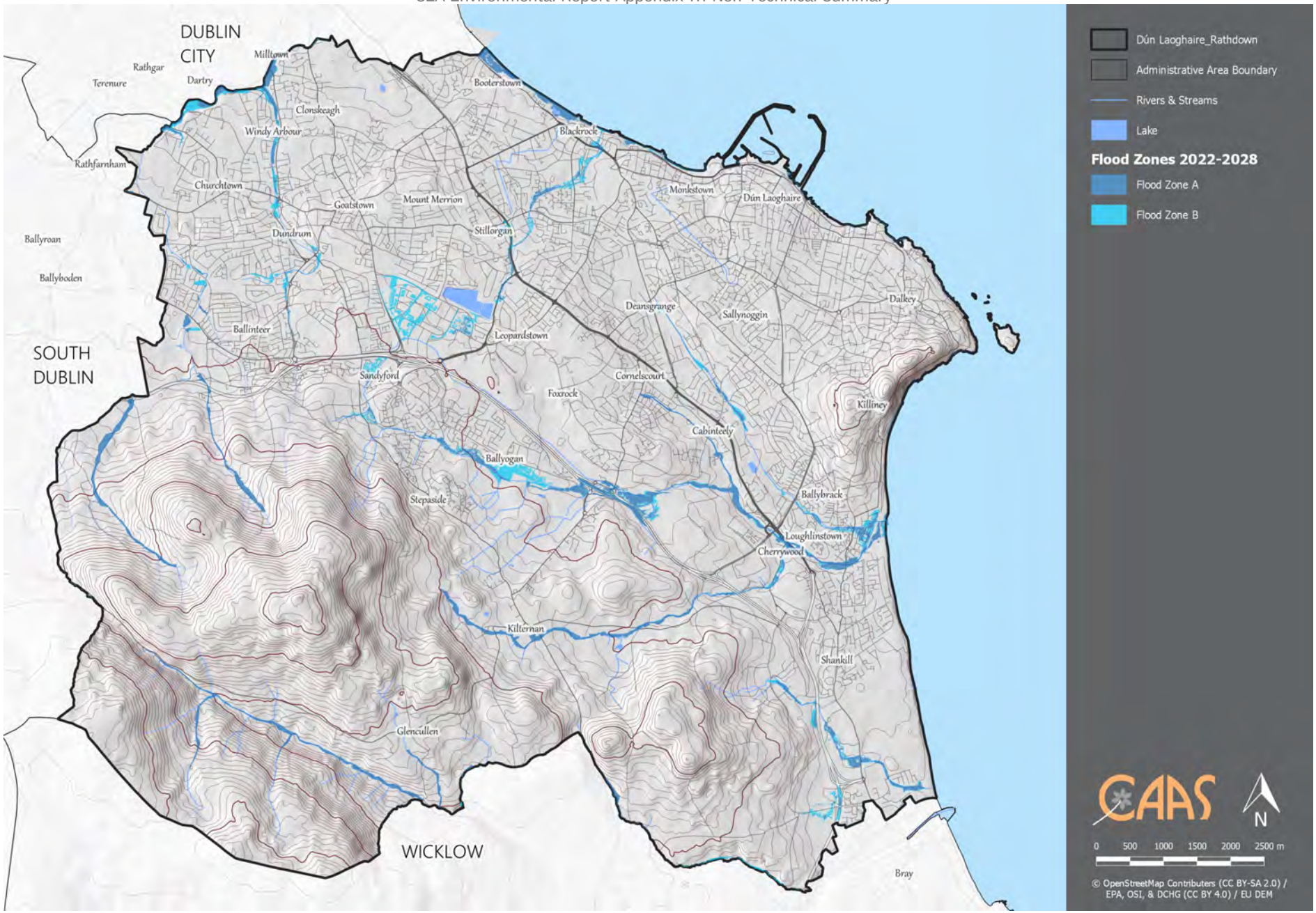

Figure 3.3 Flood Zones (Fluvial and Coastal)

3.7 Air and Climatic Factors

Total emissions of greenhouse gases by humans come from various sectors including transport, agriculture, energy industries, manufacturing combustion, industrial processes, residential developments, commercial services developments, waste management processes and fluorinated gases equipment (such as refrigeration and fire protection systems). Ireland's National Policy position is to reduce CO_2 emissions in 2050 by 80% on 1990 levels across the Energy Generation, Built Environment and Transport sectors, with a goal of Climate neutrality in the Agriculture and Land-Use sector. For 2017, total national greenhouse gas emissions are estimated to be 0.9% lower than emissions in 2016.

The National Climate Action Plan 2021 is an all of Government plan to tackle climate change and bring about a step change in Ireland's climate ambition over the coming years. The plan sets out an ambitious course of action over the coming years to address the diverse and wide-ranging impacts climate disruption is having on Ireland's environment, society, economic and natural resources. The Climate Action Plan sets out clear 2030 targets for each sector with the ultimate objective of achieving a transition to a competitive, low-carbon, climate-resilient, and environmentally sustainable society and economy by 2050. The Action Plan deals with both mitigation and adaptation.

The Climate Change Advisory Council's Annual Review 2019 identifies that the most recent projections demonstrate that, under different assumptions, Ireland will not meet its emissions reduction targets, even with the additional policies and measures included in the 2018 National Development Plan (superseded in 2021). The projections also show that progress on reducing emissions is sensitive to the future path of fuel prices. A significant and sustained rate of emissions reduction of approximately -2.5% per year is required to meet our objectives for 2050. However, it must be noted that additional measures within the recent Climate Action Plan are not included in the analysis to date.

The National Adaptation Framework Department of Communications, Climate Action and Environment, 2018), 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 National Adaptation Framework outlines a whole of government and society approach to climate adaptation. Under the Framework, a number of Government Departments will be required to prepare sectoral adaptation plans in relation to a priority area that they are responsible for.

The EPA's (2020) *Air Quality in Ireland 2019* identifies that:

- Air quality in Ireland is generally good however there are localised issues;
- There was one exceedance of the EU annual average legal limit values in 2019 at one urban traffic station in Dublin due to pollution from transport;
- Ireland was above World Health Organization (WHO) air quality guideline value levels at 33 monitoring sites – mostly due to the burning of solid fuel in cities, towns and villages; and
- There was one exceedance of the EU annual average legal limit values in 2019 at one urban traffic station in Dublin due to pollution from transport.

Problem pollutants identified by the EPA include particulate matter from burning of solid fuel and nitrogen dioxide from transport emissions in urban areas. Indications that Ireland will exceed EU limit values for nitrogen dioxide in the near future.

With regards to solutions, the report identifies that:

- To tackle the problem of particulate matter, clean ways of heating homes and improve energy efficiency of homes can be progressed; and
- To reduce the impact of nitrogen dioxide, transport options in the Government's Climate Action Plan can be implemented and transport choices can be considered by individuals.

In order to apply with European Directives relating to air quality, the EPA manages the National Ambient Air Quality Network and measures the levels of a number of atmospheric pollutants at locations across the country. The current[23] air quality within the Plan area is identified by the EPA as being *good*.

[23] 13/10/2020 (http://www.epa.ie/air/quality/)

3.8 Material Assets

Other material assets, in addition to those referred to below, covered by the SEA include archaeological and architectural heritage (see Section 3.9) natural resources of economic value, such as water and air (see Sections 3.6 and 1.1).

Public Assets and Infrastructure
Public assets and infrastructure that have the potential to be impacted upon by the Plan, if unmitigated, include; settlements; resources such as public open spaces, parks and recreational areas; public buildings and services; transport and utility infrastructure (electricity, gas, telecommunications, water supply, wastewater infrastructure etc.); forestry; and natural resources that are covered under other topics such as water and soil

Green Infrastructure
Parks and open space promote health and well-being, provide recreational facilities and range of habitats for various species. Green infrastructure is also a crucial component in building resilient communities capable of adapting to the consequences of climate change with trees, woodlands and wetlands providing carbon capture and slowing water flows while improving air quality.

Council's intention is to review and update the existing Green Infrastructure Strategy for the County in consultation will all key stakeholders and with the public during the lifetime of the County Development Plan 2022-2028. The Strategy will identify key green infrastructure aims, with support the forthcoming 'Dún Laoghaire-Rathdown County Wildlife Corridor Plan 2021' and objectives for the County taking account of the main Policy Objectives identified in the Development Plan.

Land
The Plan seeks to assist with the reuse and regeneration of brownfield sites within and adjacent to the existing built-up footprint of the County thereby contributing towards sustainable mobility and reducing the need to develop greenfield lands and associated potential adverse environmental effects.

Forestry
The largest areas of forestry are found in the south-west of the County much of which is owned by Coillte[24]. Woodlands provide recreational opportunities in addition to their heritage and economic benefits. They are also important as links in the county's green infrastructure network.

Coillte forests within the Plan area include Ticknock Forest and the upland areas around Three Rock and Two Rock Mountains. These are a valuable resource in terms of biodiversity, recreation and tourism.

The management of these forests is now under Coillte Nature which has a focus on Biodiversity and Recreation and is working in conjunction with the Dublin Mountain Partnership.

Coastline
The 17 km long coastline of Dún Laoghaire-Rathdown is amongst the most sensitive and valuable resources in the County, in terms of natural and cultural heritage, scenic beauty and recreation. The coast is an important economic resource - particularly for the fishing, aquaculture, leisure and tourism industries.

A review of the 'Coastal Defence Strategy Study'[25] and further coastal protection works are currently under way, including the design of the Corbawn Lane Coastal Protection Works and the preliminary design of the Old Bray Landfill Coastal Protection works.

Renewable Energy Potential
Under EU Directive 2001/77/EC Renewable Energy, renewable energy sources are defined as renewable non-fossil energy sources such as, but not limited to wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas, bio-gases and bio-char (i.e. the thermal treatment of natural organic materials in an oxygen-limited environment). There is potential for renewable energy development in the County and the Plan seeks to facilitate such development in a sustainable manner.

[24] Coillte Teoranta, the State Forestry Board, was established to manage the public forest built up since the commencement of State planting and is the largest provider of forest recreation in Ireland.
[25] A *Coastal Defence Strategy Study* (2010), prepared for Dún Laoghaire-Rathdown County Council identified specific coastal protection measures and provided a risk assessment of the vulnerability of the study area and hinterland to both erosion and coastal flooding. This study provided a framework for decision making in relation to development along the coast.

Minerals and Aggregates

Minerals such as iron and copper and aggregates such as sand and gravel can occur throughout the country. Minerals and aggregates are essential to manufacturing and construction.

Transport

Transport infrastructure in the County has the potential to support reductions in energy demand from the transport sector, including through electrification of modes.

The Plan area is well served by public transport, road links and cycle network. Two major road networks – the M50 and the M11/N11 traverse the Plan area.

Project Ireland 2040 and the Transport Strategy for the Greater Dublin Area 2016-2035 have set out a number of transport projects that will serve the Plan area, such as the Greater Dublin Area Cycle Network Plan, strategic pedestrian network plan, Metro Link, BusConnects, priority elements of the DART expansion project, a new DART station at Woodbrook, a Park and Ride programme including Woodbrook and Carrickmines and the Luas Green Line capacity enhancement.

Water Services

The Plan area is served by two Wastewater Treatment Plants (WWTPs) providing secondary treatment: Ringsend WWTP (D0034-01), with a design capacity of 1.64 million PE[26] and located in the north-west part of the Dublin City; and Shanganagh-Bray WWTP (D0038-01), with a design capacity of 186,000 PE and located within the Plan area to the south-east.

The Shanganagh-Bray WWTP was identified by the EPA as fully compliant with the Emission Limit Values as set out in the Wastewater Discharge Licence and spare treatment capacity is currently available in Shanganagh-Bray WWTP (59,965).

The Ringsend WWTP partially serving the Plan area is identified as a priority area where improvements are required to resolve urgent environmental issues with respect to wastewater treatment. The limitation in capacity and performance of the waste water treatment facility at Ringsend is a regional issue that affects various planning authorities. It is a Policy Objective of the Plan that the Council will, in conjunction with the Eastern and Midland Regional Authority, where appropriate, work with and support Irish Water in the delivery of the strategic objectives and strategic water and wastewater projects and infrastructure, so as to ensure provision of infrastructure to service settlements in accordance with the Core Strategy of the new County Development Plan and the settlement strategy of the RSES.

Irish Water is responsible for providing and maintaining adequate public water supply infrastructure throughout the County. Dún Laoghaire-Rathdown falls within the Water Supply Zone for the Greater Dublin Area and supply in the area is currently constrained. Irish Water has a number of new supplies coming into operation in 2020/2021, including Peamount-Saggart Pipeline, Srowland Supply Area Expansion, Vartry Water Treatment Upgrade and the Leixlip upgrade.

The Roundwood Water Supply is listed on the most recent EPA RAL (Q2 of 2020) due to elevated levels of THMs above the standard in the Drinking Water Regulations and treatment and management issues. The proposed plan of action to remedy this issue is to improve operations at the water treatment plant and to upgrade the Vartry Water Treatment Plant by June 2021.

Waste Management

The Eastern and Midland Waste Region comprises 12 local authority areas of Dublin City, Fingal, Dún Laoghaire-Rathdown, Kildare, Laois, Longford, Louth, Offaly, Meath, Wicklow, Westmeath and South Dublin. The Eastern-Midlands Waste Management Plan 2015-2021 provides the framework for solid waste management in the region and sets out a range of policies and actions to meet specified mandatory and performance-based targets.

[26] As identified in Irish Water's Water Services Strategic Plan, wastewater treatment plants are described in terms of their designed treatment capacity, which is generally expressed as population equivalent (PE). This is a measurement of total organic biodegradable load, including industrial, institutional, commercial and domestic organic load, on a wastewater treatment plant, converted to the equivalent number of PEs. One person is considered to generate 60g of five-day Biochemical Oxygen Demand (BOD) per day. 1 PE is defined as being equivalent to 60g of BOD per day.

Existing Problems

There are a number of challenges with respect to the provision of water services infrastructure, some of which are summarised above.

The Water Services Section of Dún Laoghaire-Rathdown County Council will co-operate with Irish Water in providing and maintaining adequate public water supply and wastewater collection and treatment infrastructure throughout the County for the period of the plan and beyond. In conjunction with Irish Water, the Water Services Section of Dún Laoghaire-Rathdown County Council will endeavour to ensure the continued investment in and delivery of improvements to water infrastructure over the Plan period through the implementation of the Capital Investment Plan.

The provisions of the new County Development Plan will contribute towards protection of the environment with regard to impacts arising from material assets.

3.9 Cultural Heritage

Archaeological Heritage

Archaeological heritage is protected under the National Monuments Acts (1930-2004), Natural Cultural Institutions Act 1997 and the Planning Acts.

The Record of Monuments and Places (RMP) is an inventory, put on a statutory basis by amendment to the National Monuments Act 1994, of sites and areas of archaeological significance, numbered and mapped. A recorded monument is a monument included in the list and marked on the map, which comprises the RMP set out county by county under Section 12 of the National Monuments (Amendment) Act, 1994 by the Archaeological Survey of Ireland. The definition includes Zones of Notification within which requirements for notifications of proposed works apply.

A Sites and Monuments Record (SMR)[27] is a manual containing a numbered list of all certain and possible monuments accompanied. An Urban Archaeology Survey was completed in 1995 and contained reports on historic towns dating to before 1700 A.D. with a view to delineating zones of archaeological potential (SMR Zones of Notification). The SMR formed the basis for issuing the RMP.

Figure 3.4 shows the spatial distribution of recorded monuments and associated SMR and RMP Zones of Notification in the County. There are hundreds of Recorded Monuments within the Plan area. Clusters of monuments are concentrated within and adjacent to the existing built-up footprint of the County and in the rural areas. Enclosures, fulacht fias, castles, churches and graveyards are amongst the most common recorded monuments in the Plan area.

Architectural Heritage

Records of Protected Structures are legislated for under Section 12 and Section 51 of the Planning and Development Act 2000 as amended. Protected structures are defined in the Planning and Development Act 2000 as amended as structures, or parts of structures that are of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point of view. Similar to the general spatial spread of archaeological heritage, clusters of architectural heritage are indicated within the County's settlements.

Similar to the general spatial spread of archaeological heritage, clusters of architectural heritage are indicated within the County's settlements as shown on Figure 3.5.

There are close to 2,100 entries to the Record of Protected Structures within the County[28], which include many notable buildings in the County such as: the Martello Tower in Sandycove; the Blue Church in Kiltiernan and Shanganagh Castle; Marlay House; Cabinteely House; Martello Towers and Carnegie Libraries; and the Dún Laoghaire Baths Pavilion.

In addition to Protected Structures, the Planning and Development Act, 2000 provides the legislative basis for the protection of Architectural Conservation Areas (ACAs). An ACA is a place, area or group of

[27] The RMP was issued for each county between 1995 and 1998 in a similar format to the existing SMR. However, the RMP differs from the earlier lists in that, as defined in the Act, only monuments with known locations or places where there are believed to be monuments are included. The large archive and supporting database are managed by the National Monuments Service and the records are continually updated and supplemented as additional monuments are discovered. (https://data.gov.ie/dataset/national-monuments-service-archaeological-survey-of-ireland).

[28] Dún Laoghaire-Rathdown County Development Plan 2022-2028

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, whose character it is an objective to preserve in a development plan. The ACA designation requires that planning permission must be obtained before significant works can be carried out to the exterior of a structure in the ACA that might alter the character of the structure or the ACA. There are various ACAs designated in the Plan area (as shown on Figure 3.5). These range from range from groups of artisan and estate workers cottages, planned residential Victorian squares to large areas of residential suburbs and villages.

Existing Problems
The context of archaeological and architectural heritage has changed over time within County Dún Laoghaire-Rathdown, however no existing conflicts with legislative objectives governing archaeological and architectural heritage have been identified.

3.10 Landscape

The east boundary of the Plan area runs along the coastline which includes beaches cliffs and marshes. To the south and west of the Plan area gives a way to agricultural lands and then rises into the upland scenic area of the Dublin Mountains. The coast and the Dublin Mountains are significant features of the Plan area and are used for variety of purposes, including amenity, recreation, commercial, industrial, sporting and military. They represent areas of high landscape quality, natural heritage and amenity value.

The Plan identifies 14 Landscape Character Areas, comprising:

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

The Plan area encompasses many sites and vantage points from which views over areas of great natural beauty, local landmarks, historic landscapes, adjoining Counties and the City of Dublin may be obtained. In addition to scenic views, the Plan area also contains important prospects i.e. prominent landscapes or areas of special amenity value or special interest which are visible from the surrounding area. Specific Views and Prospects for protection have been identified in the Plan and are considered when assessing planning applications. Protected views and prospects in Dún Laoghaire Rathdown are shown on Figure 3.6.

The Plan also identifies High Amenity Areas. These areas consist of landscapes of special value where inappropriate development, would contribute to a significant reduction of the landscape setting of the County. They include the Glencullen Valley, Glendoo Valley and Kilmashogue Valley.

The areas immediately adjacent to the High Amenity Areas are also sensitive landscapes. Development in these areas, may affect directly or indirectly the quality and integrity of the adjoining High Amenity areas. Within these areas, the presumption will be generally to resist any development not directly related to the area's amenity potential or its existing use for agriculture, mountain, or hill farming.[29]

High Amenity Areas and Rights of Way (which give access by the public to amenity areas) in Dún Laoghaire-Rathdown are shown on Figure 3.6.

Existing Environmental Problems
New developments have resulted in changes to the visual appearance of lands within the County however legislative objectives governing landscape and visual appearance were not identified as being conflicted with.

[29] Dún Laoghaire-Rathdown CDP 2022-2028

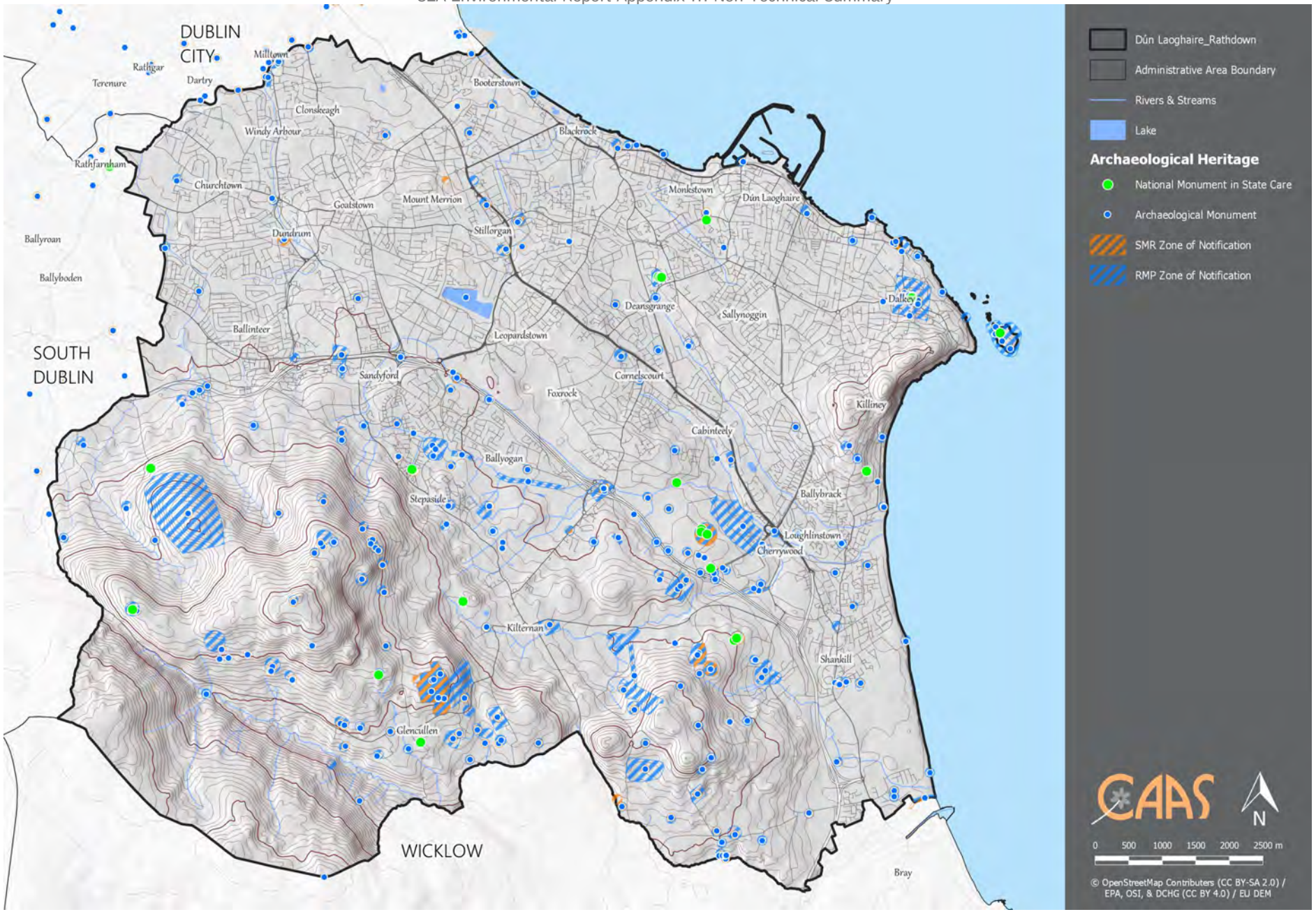

Figure 3.4 Archaeological Heritage

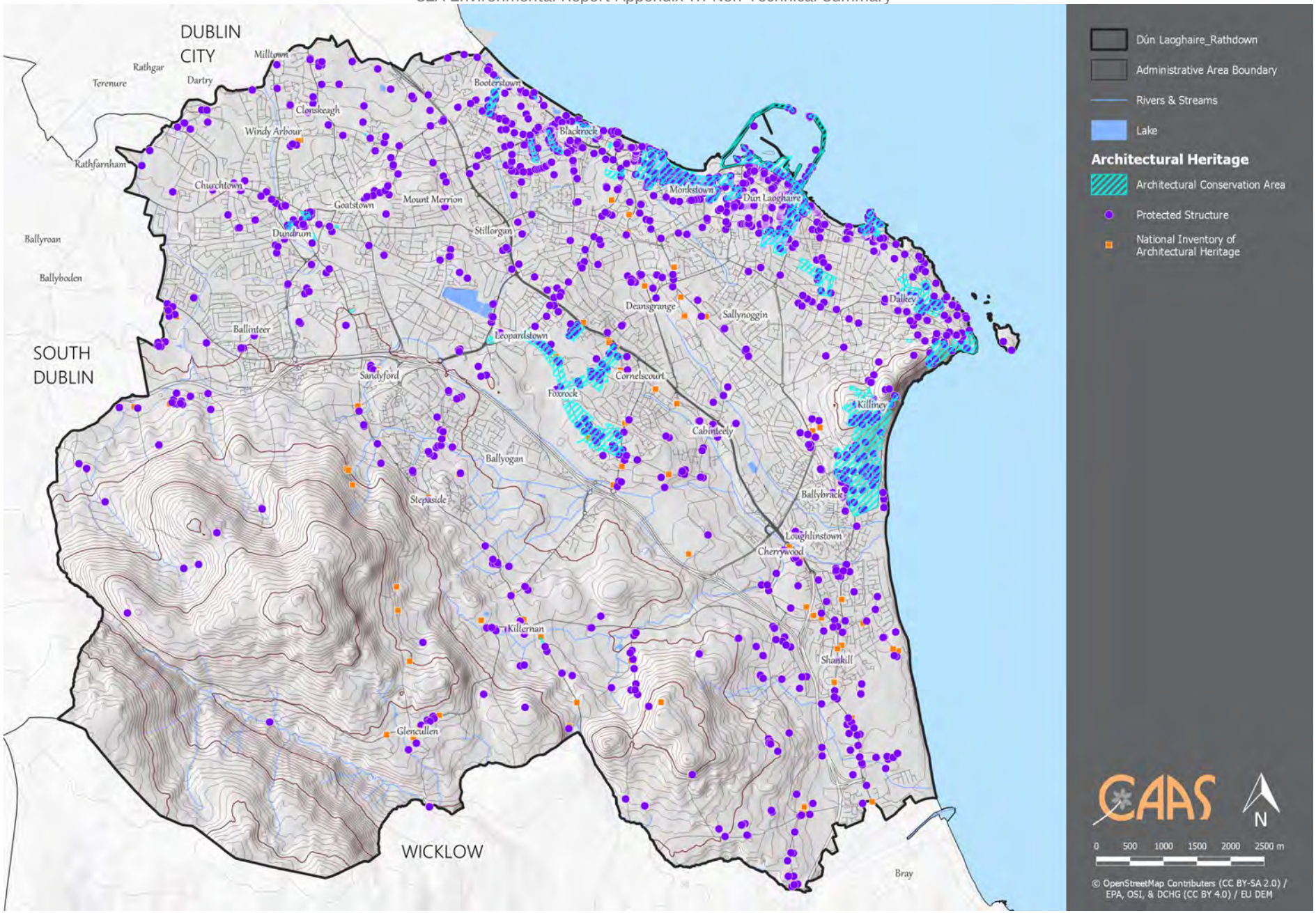

Figure 3.5 Architectural Heritage

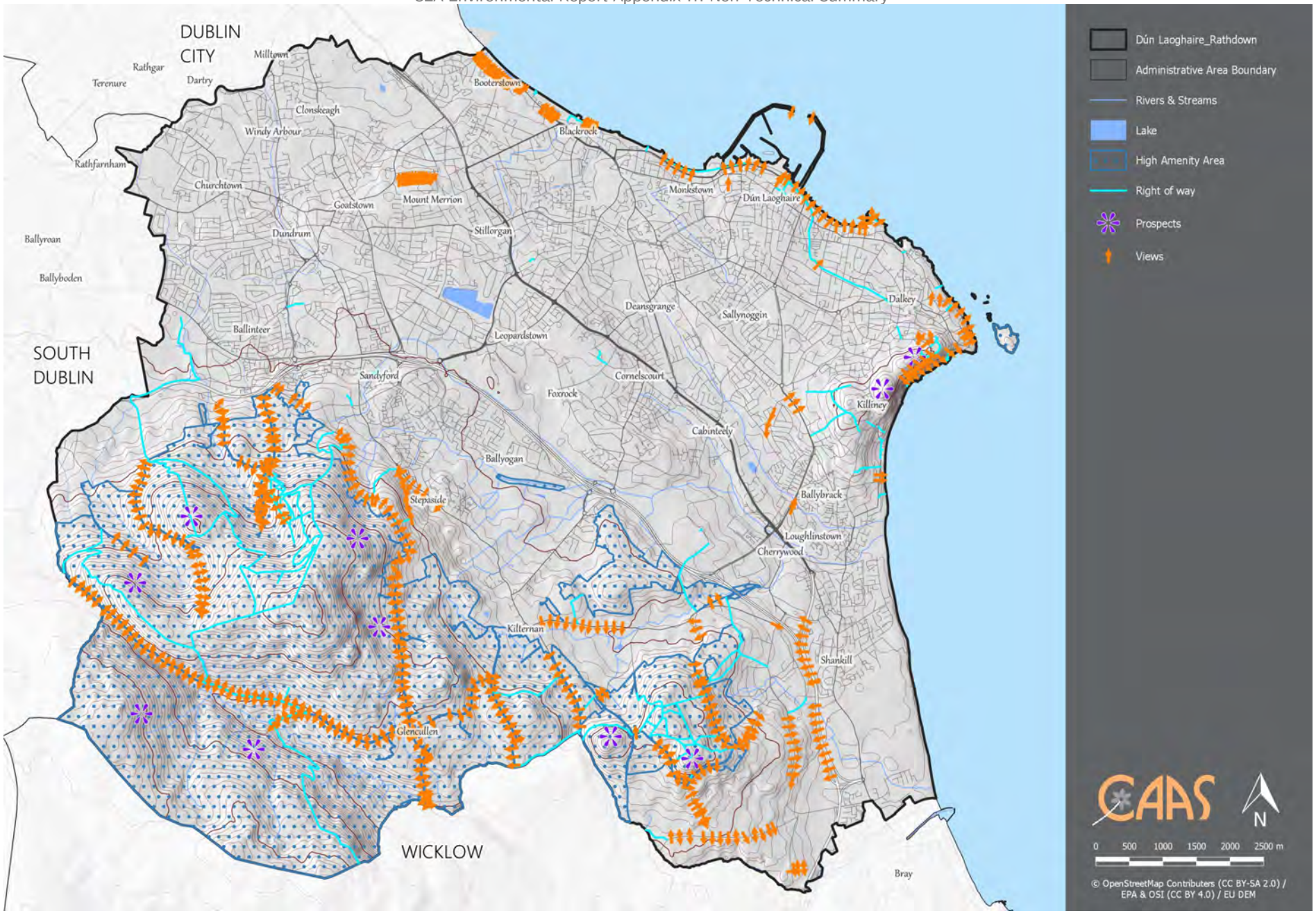

Figure 3.6 Landscape Units

3.11 Strategic Environmental Objectives

Strategic Environmental Objectives are measures developed from policies that generally govern environmental protection objectives established at international or Member State level. SEOs are set out under a range of topics and are used as to assess the Plan and the alternatives for effects.

Table 3.2 Strategic Environmental Objectives

Component	Guiding Principle	Strategic Environmental Objectives
Biodiversity, Flora and Fauna	No net contribution to biodiversity losses or deterioration	• To preserve, protect, maintain and, where appropriate, enhance the terrestrial, aquatic and soil biodiversity, particularly EU designated sites and protected species • Ensure no adverse effects on the integrity of any European site, with regard to its qualifying interests, associated conservation status, structure and function • Safeguard national, regional and local designated sites and supporting features which function as stepping stones for migration, dispersal and genetic exchange of wild species • Enhance biodiversity in line with the National Biodiversity Strategy and its targets • To protect, maintain and conserve the County's natural capital
Population and Human Health	Improve quality of life for all ages and abilities based on high-quality, serviced, well connected and sustainable residential, working, educational and recreational environments	• Promote economic growth to encourage retention of working age population and funding of sustainable development and environmental protection and management • Ensure that existing population and planned growth is matched with the required public infrastructure and the required services • Safeguard the County's citizens from environment-related pressures and risks to health and well-being
Soil (and Land)	Ensure the long-term sustainable management of land	• Protect soils against pollution, and prevent degradation of the soil resource • Promote the sustainable use of infill and brownfield sites over the use of greenfield within the County • Safeguard areas of prime agricultural land and designated geological sites
Water	Protection, improvement and sustainable management of the water resource	• Ensure that the status of water bodies is protected, maintained and improved in line with the requirements of the Water Framework Directive and Marine Strategy Framework Directive • Ensure that economic growth of the marine resource and its ecosystems are managed sustainably • Ensure water resources are sustainably managed to deliver proposed regional and County growth targets in the context of existing and projected water supply and wastewater capacity constraints ensuring the protection of receiving environments • Avoid inappropriate zoning and development in areas at risk of flooding and areas that are vulnerable to current and future erosion, particularly coastal areas • Integrate sustainable water management solutions (such as SuDS, porous surfacing and green roofs) into development proposals
Material Assets	Sustainable and efficient use of natural resources	• Optimise existing infrastructure and provide new infrastructure to match population distribution proposals in the County – this includes transport infrastructure • Ensure access to affordable, reliable, sustainable and modern energy for all which encourages a broad energy generation mix to ensure security of supply – wind, wave solar, tidal, biomass, energy from waste and traditional fossil fuels • Promote the circular economy, reduce waste, and increase energy efficiencies • Ensure there is adequate sewerage and drainage infrastructure in place to support new development • Reduce the energy demand from the transport sector and support moves to electrification of road and rail transport modes • Encourage the transition to a zero-carbon economy by facilitating the development of a grid infrastructure to support renewables and international connectivity. Reduce the average energy consumption per capita including promoting energy efficient buildings, retrofitting, smart- buildings, cities and grids
Air	Support clean air policies that reduce the impact of air pollution on the environment and public health	• To avoid, prevent or reduce harmful effects on human health and the environment as a whole resulting from emissions to air from all sectors with particular reference to emissions from transport, residential heating, industry and agriculture • Maintain and promote continuing improvement in air quality through the reduction of emissions and promotion of renewable energy and energy efficiency • Promote continuing improvement in air quality • Reduction of emissions of sulphur dioxide, nitrogen oxides, volatile organic compounds, ammonia and fine particulate matter which are responsible for acidification, eutrophication and ground-level ozone pollution • Meet Air Quality Directive standards for the protection of human health — Air Quality Directive • Significantly decrease noise pollution by 2020 and move closer to WHO recommended levels
Climatic Factors	Achieving transition to a competitive, low carbon, climate-resilient economy that is cognisant of environmental impacts	• To minimise emissions of greenhouse gasses • Integrate sustainable design solutions into the County's infrastructure (e.g. energy efficient buildings; green infrastructure). • Contribute towards the reduction of greenhouse gas emissions in line with national targets. • Promote development resilient to the effects of climate change • Promote the use of renewable energy, energy efficient development and increased use of public transport
Cultural Heritage	Safeguard cultural heritage features and their settings through responsible design and positioning of development	• Protect places, features, buildings and landscapes of cultural, archaeological or architectural heritage
Landscape	Protect and enhance the landscape character	• To implement the Plan's framework for identification, assessment, protection, management and planning of landscapes having regard to the European Landscape Convention

Section 4 Alternatives

4.1 Introduction

The SEA Directive requires that reasonable alternatives (taking into account the objectives and the geographical scope of the plan or programme) are identified, described and evaluated for their likely significant effects on the environment. Available Alternatives for the County Development Plan have been identified by Dún Laoghaire-Rathdown County Council under Types 1 to 5 below.

4.2 Limitations in Available Alternatives

The Plan is required to be prepared by the Planning and Development Act 2000 (as amended), which specifies various types of objectives that must be provided for by the Plan. The alternatives available for the Plan are limited by the provisions of higher-level planning objectives, including those of the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES) for the Eastern and Midlands Region. These documents set out various requirements for the content of the Plan including on topics such as land use zoning and the sustainable development of rural areas.

4.3 Type 1: Alternatives for an Ecosystem Services Approach to the Plan

Although many natural capital[30] and ecosystem[31] service issues have been taken into account over previous Plan periods, the importance of these in fulfilling environmental obligations has increasingly emerged. An Ecosystems Services Approach would provide a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

- Type 1 - Alternative A: A Plan that takes an Ecosystems Services Approach.
- Type 1 - Alternative B: A Plan that does not take an Ecosystems Services Approach

Alternative A would integrate a strategy throughout the Plan for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

Principles that would be integrated throughout the Plan, in a coordinated and comprehensive manner, would include:

- Consideration of natural systems - by using knowledge of interactions in nature and how ecosystems function
- Taking into account of the services that ecosystems provide - including those that underpin social and economic well-being, such as flood and climate regulation or recreation, culture and quality of life
- Involving people - those who benefit from the ecosystem services and those managing them need to be involved in decisions that affect them.

This would mean that there would be:

- An increased likelihood in the extent, magnitude and frequency of positive effects occurring with regard to natural capital[32] and ecosystem service issues, such as the management of air quality, noise pollution, light pollution, pollination, flood risk, water bodies and river basins and natural resources supporting energy production and recreation; and
- A decreased likelihood in the extent, magnitude and frequency of adverse effects on natural capital and ecosystem services.

[30] Renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals)
[31] Ecosystems are multifunctional communities of living organisms interacting with each other and their environment. Ecosystems provide a series of services for human well-being (ecosystem services) either directly or indirectly contributing towards human wellbeing
[32] Renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals)

Alternative B would not integrate a strategy throughout the Plan for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

As has been the case over previous plan periods, many natural capital and ecosystem service issues would be integrated into individual Plan Policy Objectives and into decision making at lower tiers of plan preparation and development management. However, this approach would be less coordinated and comprehensive than would be the case under an Ecosystems Services Approach.

This would mean that there would be:

- A decreased likelihood in the extent, magnitude and frequency of positive effects occurring with regard to natural capital and ecosystem service issues; and
- An increased likelihood in the extent, magnitude and frequency of adverse effects on natural capital and ecosystem services.

Selected Type 1 Alternative for the Plan: Alternative A, subject to review of the existing Green Infrastructure Strategy into which the Ecological Network which will be integrated and which will align with the DLR County Biodiversity Action Plan (see Plan Policy Objectives GIB1 and GIB23).

4.4 Type 2: Land Use Zoning

These types of alternatives consider the land use zoning of social, educational, health, religious, recreational and leisure, cultural and civic infrastructure (collectively referred to as neighbourhood infrastructure) to serve the local and wider community.

- Type 2 - Alternative A: Zone neighbourhood infrastructure as it currently is, along with residential uses, with Land Use Zoning Objective A ("To protect and/or improve residential amenity").
- Type 2 - Alternative B: Zone neighbourhood infrastructure with Land Use Zoning Objective SNI "To protect, improve and encourage the provision of sustainable neighbourhood infrastructure".

Alternative A would place the lands that provide this essential infrastructure at risk from coming under pressure for residential development. Such pressure could result in existing facilities / uses on site being lost or significantly downgraded to a degree that they would not adequately serve the expanding adjoining residential communities.

Because of this, opportunities would be lost for retaining community and other facilitates within close proximity of the communities they serve and the result would be more unsustainable forms of development with increased travel times and a resultant need to travel by private car with associated transport generated emissions.

Alternative A would make living and working within and adjacent to the existing built-up footprint less desirable. As areas within and adjacent to the existing built-up footprint are generally more robust from an environmental perspective, better serviced and better connected, this alternative would hinder the County to sustainably accommodate new residents and maintain and improve services to existing and future communities in accordance with the NPF and RSES.

Alternative B would:

- Improve accessibility / permeability between new and existing residential communities and neighbourhood infrastructure, reducing travel times and the need to travel by private car with associated transport generated emissions; and
- Ensure that the existing and future, local and wider, communities are better served by this infrastructure in accordance with the NPF and RSES.

As a result, this alternative would make living and working within and adjacent to the existing built-up footprint more desirable – these areas are generally more robust from an environmental perspective, better serviced and better connected. In this way, this alternative would contribute towards environmental protection and sustainable development, enabling the County to sustainably accommodate new residents and maintain and improve services to existing and future communities.

Selected Type 2 Alternative for the Plan: Alternative B: Zone neighbourhood infrastructure with Land Use Zoning Objective SNI "To protect, improve and encourage the provision of sustainable neighbourhood infrastructure".

4.5 Type 3: Alternatives for Additional Accommodation in Existing Built-up Areas

The "0/0 Zone" in the 2016 Plan has an objective for "No increase in the number of buildings permissible". This objective covers sensitive areas of Killiney and Dalkey proximate to the coast and much of this area is located close to the DART line, where higher densities would otherwise be permissible. The Office of the Planning Regulator requested for the "0/0 Zone" contained in the existing 2016 Plan not to be included in the new Plan.

Three alternatives were considered under this type as follow:

- Type 3 - Alternative A: Include "0/0 Zone"
- Type 3 - Alternative B: Do not include "0/0 Zone"
- Type 3 - Alternative C: Include "0/0 Zone" but reduce extent in comparison to the 2016 Plan's coverage

By applying the "0/0 Zone" (which has an objective for "No increase in the number of buildings permissible") over the widest area, **Alternative A** would provide the greatest amount of protection of areas which are often sensitive from an amenity (including that contributed towards by architectural structures/areas, archaeological monuments/zones and views, which are already protected under other Plan objectives) and ecological perspective (including the protected Dalkey Coastal Zone and Killiney Hill pNHA).

However, this application of the "0/0 Zone" in locations close to public transport, where government policy supports higher densities, would not contribute towards objectives for sustainable mobility, minimising greenhouse gas emissions from transport, efficiently using land, compact growth and optimising the use of existing infrastructure. Development that could be sustainably accommodated in the area covered by the "0/0 Zone" under Alternative A would have the potential to be pushed out towards areas that are less well-serviced and less well-connected, resulting in unnecessary potentially significant adverse effects on all environmental components.

By not including the "0/0 Zone", **Alternative B** would provide the least amount of protection of areas which are often sensitive from an amenity (including that contributed towards by architectural structures/areas, archaeological monuments/zones and views, which are already protected under other Plan objectives) and ecological perspective (including the protected Dalkey Coastal Zone and Killiney Hill pNHA).

The removal of the "0/0 Zone" in locations close to public transport, where government policy supports higher densities, would contribute towards objectives for sustainable mobility, minimising greenhouse gas emissions from transport, efficiently using land, compact growth and optimising the use of existing infrastructure. Development that could be sustainably accommodated in the area currently covered by the "0/0 Zone" under the existing 2016 Plan would not be pushed out towards areas that are less well-serviced and less well-connected, avoiding unnecessary potentially significant adverse effects on all environmental components.

Alternative C involves including the "0/0 Zone" but reducing its extent in comparison to the 2016 Plan's coverage, a mixture of Alternative A and B that takes into account traffic, visual and ecological designation issues and provides the "0/0 Zone" in some locations but not in others. The new objective for these areas would allow for sensitive infill in locations which are within 10 minutes' walk of a DART station and which would not detract from the unique character of the area visually or by traffic generation which would necessitate changes to the road network.

Selected Type 3 Alternative for the Plan: Alternative C: Include "0/0 Zone" but reduce extent in comparison to the 2016 Plan's coverage.

4.6 Type 4: Densities

Alternatives identified relating to densities comprise:

- Type 4 - Alternative A: Application of a single standard density across the whole County in order to calculate the potential residential yield relating to land zoned for residential purposes for the Core Strategy.
- Type 4 - Alternative B: Application of different densities at different locations, as appropriate; higher densities where sustainable transport mode opportunities are available and lower densities where constraints are presented by, for example, cultural heritage designations or the local road network.

Alternative A could lead to the potential over or undersupply of land for primarily residential purposes.

The application of a singular low net residential density across the County could fundamentally undermine both national and regional strategic outcomes including the efficient use of land, compact growth and the transition towards a low carbon and more climate resilient society. This would have the potential to push new development towards more environmentally sensitive lands outside of the County that are less well-serviced and less well-connected, resulting in unnecessary potentially significant adverse effects on all environmental components.

The application of a singular high net residential density could result in a potential mis-alignment between the supply of zoned land to meet the projected demand for new housing. This could result in a misalignment between new development and essential services provision with associated potential for adverse effects on environmental components.

Alternative B would provide for the most sustainable Core Strategy, which would contribute towards environmental protection and management the most.

Higher densities would be provided where sustainable transport mode opportunities are available and lower densities would be provided where constraints are presented by, for example, cultural heritage designations or the local road network. This approach would contribute towards national and regional strategic outcomes including the efficient use of land, compact growth and the transition towards a low carbon and more climate resilient society.

Alternative B would help to ensure compact, sustainable development within and adjacent to the existing built-up footprint and would conflict with the protection and management of environmental components the least. Alignment between new development and essential services provision would be most likely under Alternative B.

Selected Type 4 Alternative for the Plan: Alternative B: Application of different densities at different locations, as appropriate.

4.7 Type 5: Strategic Land Reserve for Old Connaught

In light of the population allocation approved by the Eastern Midland Regional Assembly to enable the planned growth of the Key Town of Bray to 2031 (falling outside the timeframe of the 2022-2028 Plan), and the regional designation of Old Connaught as a strategic residential development area to facilitate the westward expansion of Bray, it is considered appropriate to identify a Strategic Land Reserve (SLR) to meet this designated future growth. The SLR does not comprise a residential zoning status or any future zoning status however it does protect an area from ad hoc and inappropriate development and provide a framework for potential future growth beyond the timeframe of the Plan period of 2028.

Alternatives identified relating to the SLR, as identified and considered in the Draft Background Paper for the SLR for Old Connaught, comprise:

- Type 5 - SLR 1 Alternative A: Old Connaught North (see Figure 4.1)
- Type 5 - SLR 2 Alternative B: Old Connaught North West (see Figure 4.2)
- Type 5 - SLR 3 Alternative C: Old Connaught South West (see Figure 4.2)

Alternative A: SLR 1 Old Connaught North
The SLR 1 lands are considered to be strategically located to benefit from planned strategic infrastructure upgrades in the area. The location of the lands immediately adjacent to and within walking distance of planned high frequency transport including the Green Line Luas extension, a Core Bus Corridor and the DART, would support the potential of the lands to comprise a sustainable urban extension of the Old Connaught area with access, through sustainable means, to strategic employment locations, local services and amenities. Constraints relating to the SLR 1 lands include the loss of existing agricultural and forestry land, impacts on identified protected views, proximity to a protected structure and potential noise pollution associated with the M11. While the lands would comprise 'greenfield' expansion of the built-up area as opposed to brownfield/infill compact growth it is considered that, subject to planned infrastructure upgrades, the SLR 1 lands would comprise a sustainable extension to the Old Connaught area.

Alternative B: SLR 2 Old Connaught North West
The SLR 2 lands are considered to be well located to benefit from planned strategic infrastructure upgrades in the area. The location of the lands in proximity to the planned Green Line Luas extension would support the potential of the lands to comprise a sustainable urban extension of the Old Connaught area with access, through sustainable means, to strategic employment locations, local services and amenities. Constraints relating to the SLR 2 lands include the loss of an active sporting facility serving the local and wider community and impacts on identified protected views. While the lands would not be considered to comprise compact growth it is considered that, in the context of planned infrastructure upgrades, the SLR 2 lands could, in part, comprise a sustainable extension to the Old Connaught area.

Alternative C: SLR 3 Old Connaught South West
The SLR 3 lands are considered to be well located to benefit from planned strategic infrastructure upgrades in the area. The lands do however have a number of constraints including: the comparative distance of part of the lands from planned high frequency transport and resultant connectivity to requisite amenities, services and employment locations; loss of existing agricultural lands; proximity to the Ballyman Glen, a Special Area of Conservation; impact on views identified for preservation; existing utility infrastructure locating at the lands; and, archaeology.

Selected Type 5 Alternative for the Plan: Alternative A: SLR 1 Old Connaught North. Having appraised each of the potential sites and undertaken a comparative analysis, SLR 1 (Alternative A) emerges as the most preferable on a number of fronts, and in particular those criteria identified in the NPF and RSES, and it is therefore recommended that SLR 1 is advanced as a potential strategic land reserve for inclusion in the Plan. The rationale for this recommendation is expanded upon further in the main SEA Environmental Report.

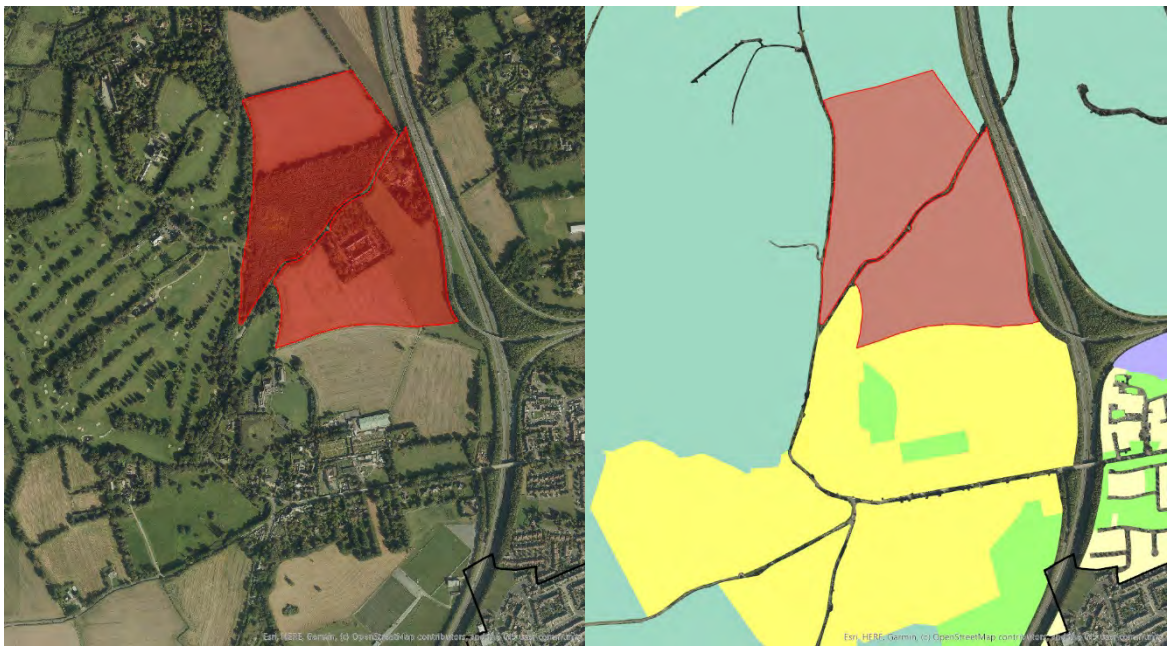

Figure 4.1 Type 5, Alternative A: SLR 1 Old Connaught North

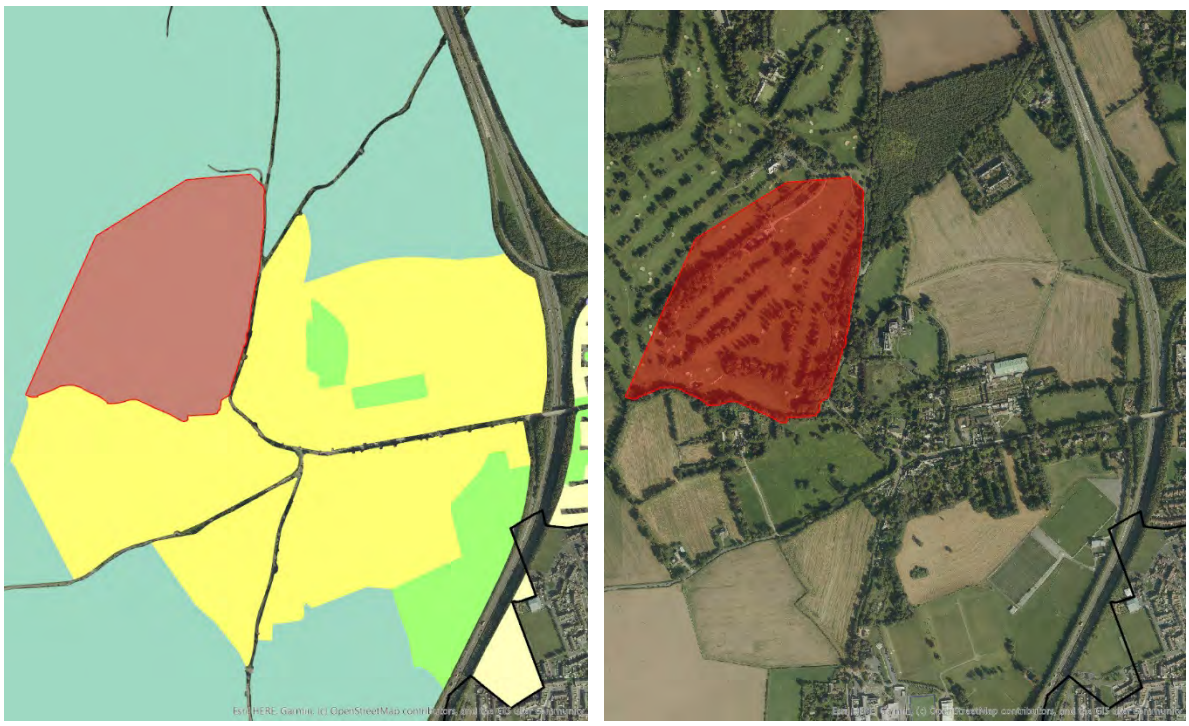

Figure 4.2 Type 5, Alternative B: SLR 2 Old Connaught North West

4.8 Reasons for Choosing the Selected Alternatives in light of Other Reasonable Alternatives Considered

Selected alternatives for the Plan from each of the tiers of alternatives that emerged from the planning/SEA process are indicated above.

These alternatives have been incorporated into the Plan having regard to both:

1. The environmental effects which are identified by the SEA and are summarised above; and
2. Planning - including social and economic - effects that also were considered by the Council.

Section 5 Summary of Effects arising from Plan

Table 5.1 summarises the overall environmental effects arising from Plan provisions.

All parts of the Plan-preparation process were informed by the SEA, AA and SFRA processes - this includes the preparation of the Chief Executive's Draft Plan, Members' Amendments to that Plan in advance of public display, Proposed Material Alterations and Further Modifications. The mitigation integrated into the final, adopted Plan includes that summarised in Section 6 of this report.

Table 5.1 Overall Evaluation – Effects arising from the Plan

Environmental Component	Environmental Effects, in combination with the wider planning framework Effects include in-combination effects that are planned for through the wider planning framework including the NPF and associated NDP 2018, the Eastern and Midland RSES, adjacent Development Plans and lower-tier land use plans.		
	Significant Positive Effect, likely to occur	**Potentially Significant Adverse Environmental Effects, if unmitigated**	**Likely Residual Adverse Non-Significant Effects**
Biodiversity and Flora and Fauna	• Contribution towards protection of ecology (including designated sites, ecological connectivity, habitats) by facilitating development of lands (including those within and adjacent to the County's existing built-up footprint) that have relatively low levels of environmental sensitivities and are served (or can be more easily served) by infrastructure and services, thereby helping to avoid the need to develop more sensitive, less well-serviced lands elsewhere in the County and beyond. • Contribution towards the maintenance of existing green infrastructure and associated ecosystem services, listed species, ecological connectivity and non-designated habitats. • Contribution towards protection and/or maintenance of biodiversity and flora and fauna by contributing towards the protection of natural capital including the environmental vectors of air, water and soil. Biodiversity and flora and fauna includes biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species (including birds and bats), listed/protected species, ecological connectivity and non-designated habitats (including terrestrial and aquatic habitats), and disturbance to biodiversity and flora and fauna – including terrestrial and aquatic biodiversity and flora and fauna. • Sustains existing sustainable rural management practices – and the communities who support them – to ensure the continuation of long-established managed landscapes and the flora and fauna that they contain.	Arising from both construction and operation of development and associated infrastructure: • Loss of/damage to biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species, listed species, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna; • Habitat loss, fragmentation and deterioration, including patch size and edge effects; and • Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species such as birds and bats.	• Loss of an extent of non-protected habitats and species arising from the replacement of semi-natural land covers with artificial surfaces. • Losses or damage to ecology (these would be in compliance with relevant legislation).

Environmental Component	Environmental Effects, in combination with the wider planning framework Effects include in-combination effects that are planned for through the wider planning framework including the NPF and associated NDP 2018, the Eastern and Midland RSES, adjacent Development Plans and lower-tier land use plans.		
	Significant Positive Effect, likely to occur	**Potentially Significant Adverse Environmental Effects, if unmitigated**	**Likely Residual Adverse Non-Significant Effects**
Population and Human Health	• Promotion of economic growth to encourage retention of working age population and funding of sustainable development and environmental protection and management. • Contribution towards appropriate provision of infrastructure and services to existing population and planned growth by facilitating compact development of lands (including those within and adjacent to the County's existing built-up footprint) that are served (or can be more easily served) by infrastructure and services, thereby helping to avoid the need to develop less well-serviced lands elsewhere in the County and beyond • Contribution towards the protection of human health by facilitating development of lands (including those within and adjacent to the County's existing built-up footprint) that have relatively low levels of environmental sensitivities and are served (or can be more easily served) by infrastructure and services, thereby helping to avoid the need to develop more sensitive, less well-serviced lands elsewhere in the County and beyond. • Contributes towards protection of human health as a result of contributing towards the protection of natural capital including environmental vectors, including air and water.	• Potential adverse effects arising from flood events. • Potential interactions if effects arising from environmental vectors.	• Potential interactions with residual effects on environmental vectors – please refer to residual adverse effects under "Soil", "Water" and "Air and Climatic Factors" below.
Soil	• Contribution towards the protection of soils (including those used for agriculture) and designated sites of geological heritage by facilitating development of lands (including those within and adjacent to the County's existing built-up footprint) that have relatively low levels of environmental sensitivities and are served (or can be more easily served) by infrastructure and services, thereby helping to avoid the need to develop more sensitive, less well-serviced lands elsewhere in the County and beyond. • Contribution towards the protection of the environment from contamination the highest standards of remediation, and where appropriate to consultations with the EPA and other relevant bodies, will be required to resolve any instances of environmental pollution created by contaminated land.	• Potential adverse effects on the hydrogeological and ecological function of the soil resource, including as a result of development on contaminated lands. • Potential for riverbank and coastal erosion.	• Loss of an extent of soil function arising from the replacement of semi-natural land covers with artificial surfaces. • Coastal and riverbank erosion will continue to occur naturally over time and is likely to be enhanced by climate change

Environmental Component	Environmental Effects, in combination with the wider planning framework Effects include in-combination effects that are planned for through the wider planning framework including the NPF and associated NDP 2018, the Eastern and Midland RSES, adjacent Development Plans and lower-tier land use plans.		
	Significant Positive Effect, likely to occur	**Potentially Significant Adverse Environmental Effects, if unmitigated**	**Likely Residual Adverse Non-Significant Effects**
Water	• Contribution towards the protection of water by facilitating development of lands (including those within and adjacent to the County's existing built-up footprint) that have relatively low levels of environmental sensitivities and are served (or can be more easily served) by infrastructure and services, thereby helping to avoid the need to develop more sensitive, less well-serviced lands elsewhere in the County and beyond. • Contributions towards the protection of water resources including the status of surface and groundwaters and water-based designations. • Contribution towards flood risk management and appropriate drainage.	• Potential adverse effects upon the status of water bodies and entries to the WFD Register of Protected Areas (ecological and human value), arising from changes in quality, flow and/or morphology. • Increase in flood risk and associated effects associated with flood events.	• Any increased loadings as a result of development to comply with the River Basin Management Plan. • Flood related risks remain due to uncertainty with regard to extreme weather events – however such risks will be mitigated by measures that have been integrated into the Plan.
Material Assets	• Contribution towards appropriate provision of infrastructure and services to existing population and planned growth by facilitating compact development of lands (including those within and adjacent to the County's existing built-up footprint) that are served (or can be more easily served) by infrastructure and services, thereby helping to avoid the need to develop less well-serviced lands elsewhere in the County and beyond. • Contribution towards compliance with national and regional water services and waste management policies. • Contribution towards increase in renewable energy use by facilitating renewable energy and electricity transmission infrastructure developments. • Contribution towards limits in increases in energy demand from the transport sector by facilitating sustainable compact growth. • Contribution towards reductions in average energy consumption per capita including promoting energy efficient buildings, retrofitting, smart buildings, cities and grids.	• Failure to provide adequate and appropriate waste water treatment (water services infrastructure and capacity ensures the mitigation of potential conflicts). • Failure to adequately treat surface water run-off that is discharged to water bodies (water services infrastructure and capacity ensures the mitigation of potential conflicts). • Failure to comply with drinking water regulations and serve new development with adequate drinking water (water services infrastructure and capacity ensures the mitigation of potential conflicts). • Increases in waste levels. • Potential impacts upon public assets and infrastructure. • Potential interactions at local level between agricultural waste and soil, water, biodiversity and human health – including nitrogen deposition as a result of agricultural activities. However, this is likely to be a less significant issue at County level due to low levels of intensive agriculture.	• Exceedance of capacity in critical infrastructure risks remain, including due to uncertainty with regard to climate – however, such risks will be mitigated by: measures, including those requiring the timely provision of critical infrastructure, and compliance with the Water Framework Directive and associated River Basin Management Plan. • Residual wastes to be disposed of in line with higher-level waste management policies. • Any impacts upon public assets and infrastructure to comply with statutory planning/consent-granting framework.

Environmental Component	Environmental Effects, in combination with the wider planning framework Effects include in-combination effects that are planned for through the wider planning framework including the NPF and associated NDP 2018, the Eastern and Midland RSES, adjacent Development Plans and lower-tier land use plans.		
	Significant Positive Effect, likely to occur	**Potentially Significant Adverse Environmental Effects, if unmitigated**	**Likely Residual Adverse Non-Significant Effects**
Air and Climatic Factors	• Contribution towards climate mitigation and adaptation by facilitating compact development of lands (including those within and adjacent to the County's existing built-up footprint) that are served (or can be more easily served) by infrastructure and services, thereby helping to avoid the need to develop less well-serviced lands elsewhere in the County and beyond. • In combination with other plans, programmes etc., contribution towards the objectives of the wide policy framework relating to climate mitigation and adaptation, and associated contribution towards maintaining and improving air quality and managing noise levels, including through measures relating to: o Sustainable compact growth; o Sustainable mobility, including walking, cycling and public transport; o Drainage, flood risk management and resilience; o Sectors including agriculture, residential heating and infrastructure; o Sustainable infrastructure design solutions including energy efficient buildings and green infrastructure.	• Potential conflict between development under the Plan and aiming to reduce carbon emissions in line with local, national and European environmental objectives. • Potential conflict between development under the Plan and aiming to reduce carbon emissions in line with local, national and European environmental objectives. • Potential conflicts between transport emissions, including those from cars, and air quality. • Potential conflicts between increased frequency of noise emissions and protection of sensitive receptors. • Potential conflicts with climate adaptation measures including those relating to flood risk management.	• An extent of travel related greenhouse gas and other emissions to air. This has been mitigated by provisions which have been integrated into the Plan, including those relating to sustainable compact growth and sustainable mobility. • Interactions between noise emissions and sensitive receptors. Various provisions have been integrated into the Plan to ensure that noise levels at sensitive receptors will be minimised.
Cultural Heritage	• Contributes towards protection of cultural heritage elsewhere in the County by facilitating development within and adjacent to the County's existing built-up footprint. • Contributes towards protection of cultural heritage within and adjacent to the County's existing built-up footprint by facilitating brownfield development and regeneration.	• Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities.	• Potential effects on known architectural and archaeological heritage and unknown archaeology however, these will occur in compliance with legislation.
Landscape	• Contributes towards protection of wider landscape and landscape designations by facilitating development within and adjacent to the County's existing built-up footprint.	• Occurrence of adverse visual impacts and conflicts with the appropriate protection of designations relating to the landscape.	• Landscapes will change overtime as a result of natural changes in vegetation cover combined with new developments that will occur in compliance with the Plan's landscape protection measures.

Section 6 Mitigation and Monitoring Measures

6.1 Mitigation

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Plan. Various environmental sensitivities and issues have been communicated to the Council through the SEA, Appropriate Assessment (AA) and Strategic Flood Risk Assessment (SFRA) processes. By integrating all related recommendations into the Plan, the Council have ensured that both the beneficial environmental effects of implementing the Plan have been and will be maximised and that potential adverse effects have been and will be avoided, reduced or offset.

Mitigation was achieved through the:

- Strategic work undertaken by the Council to ensure contribution towards environmental protection and sustainable development[33];
- Considering alternatives for the Plan[34];
- Integration of environmental considerations into zoning provisions of the Plan[35]; and
- Integration of individual SEA, AA and SFRA provisions into the text of the Plan.

6.2 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. Monitoring is based around indicators that allow quantitative measures of trends and progress over time relating to the Strategic Environmental Objectives identified at Table 3.2 and used in the evaluation. Monitoring indicators, targets, sources and remedial action is provided at Table 6.1 overleaf.

[33] Far in advance of both the submission of the Chief Executive's Draft Plan to the Elected Members for approval and the placing of the Draft Plan on public display, Dún Laoghaire-Rathdown County Council undertook various background work in order to inform the preparation of the Plan.

The findings of this strategic work have been integrated into the Plan and will contribute towards both environmental protection and management and sustainable development within the County.

Strategic work undertaken by the Council includes background work in relation to Plan Strategies and other provisions for a variety of sectors, including:

- Climate Action;
- Transport and Mobility;
- Green Infrastructure;
- Infrastructure Assessment;
- Housing Strategy and Interim Housing Needs Demand Assessment;
- Building Height Strategy;
- Waste Management Guidelines;
- Green Roofs;
- Stormwater Management Policy
- Interim to Dun Laoghaire Urban Framework Plan;
- Background Paper for the SLR for Old Connaught;
- Landscape Character Areas;
- Wind Energy Strategy;
- Dún Laoghaire Urban Framework Plan;
- Sandyford Urban Framework; and
- Record of Protected Structures.

[34] Although strategic alternatives in relation to the content of the Plan were significantly limited for the Plan (see Section 4), as part of the Plan preparation/SEA process, the Council considered a number of alternatives for the Plan. These alternatives were assessed by the SEA process and the findings of this assessment informed the selection of preferred alternatives, facilitating an informed choice with respect to the type of Plan that was prepared and placed on public display.

[35] Environmental considerations were integrated into the Plan's zoning through an interdisciplinary approach. Zoning has been applied in a way that primarily seeks to achieve sustainable and compact growth, taking into account the various requirements set out in the higher-level NPF and Eastern and Midland RSES. The detailed Plan preparation process undertaken by the Planning Department combined with specialist input from the SFRA process sought to facilitate zoning that avoids inappropriate development being permitted in areas of high flood risk. Various provisions have been inserted into the Plan that provide for flood risk management at project level. Also taken into account were environmental sensitivities relating to ecology, cultural heritage, landscape and water.

Table 6.1 Indicators, Targets, Sources and Remedial Action

Component	Code	Indicators	Targets	Sources	Remedial Action
Biodiversity, Flora and Fauna	BFF	• Condition of European sites	• Require all local level land use plans to include ecosystem services and green/blue infrastructure provisions in their land use plans and as a minimum, to have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species • Complete the review of the Dún Laoghaire-Rathdown Biodiversity Plan 2009-2013 and implement the revised Plan	• Department of Housing, Local Government and Heritage 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 Housing, Local Government and Heritage's National Birds Directive Monitoring Report for the under Article 12 (every 3 years) • Consultations with the NPWS	• Where condition of European sites is found to be deteriorating this will be investigated with the Regional Assembly and the DHLGH to establish if the pressures are related to Plan actions / activities. A tailored response will be developed in consultation with these stakeholders in such a circumstance.
		• Number of spatial plans that have included ecosystem services content, mapping and policy to protect ecosystem services when their relevant plans are either revised or drafted	• Require all local level land use plans to include ecosystem services and green/blue infrastructure provisions in their land use plans and as a minimum, to have regard to the required targets in relation to the conservation of European sites, other nature conservation sites, ecological networks, and protected species • Complete the review of the Dún Laoghaire-Rathdown Biodiversity Plan 2009-2013 and implement the revised Plan	• Internal review of local land use plans	• Review internal systems
		• SEAs and AAs as relevant for new Council policies, plans, programmes etc.	• Screen for and undertake SEA and AA as relevant for new Council policies, plans, programmes etc.	• Internal monitoring of preparation of local land use plans	• Review internal systems
		• Status of water quality in the County's water bodies	• Included under Water below	• Included under Water below	• Included under Water below
		• Compliance of planning permissions with Plan measures providing for the protection of Biodiversity and flora and fauna – see Chapter 8 "Green Infrastructure and Biodiversity"	• For planning permission to be only granted when applications demonstrate that they comply with all Plan measures providing for the protection of biodiversity and flora and fauna – see Chapter 8 "Green Infrastructure and Biodiversity"	• Internal monitoring of likely significant environmental effects of grants of permission	• Review internal systems
Population and Human Health	PHH	• Implementation of Plan measures relating to the promotion of economic growth as provided for by Chapter 6 "Enterprise and Employment Strategy"	• For review of progress on implementing Plan objectives to demonstrate successful implementation of measures relating to the promotion of economic growth as provided for by Chapter 6 "Enterprise and Employment Strategy" • By 2020 all citizens will have access to speeds of 30Mbps, and that 50% of citizens will be subscribing to speeds of 100Mbps (Also relevant to Material Assets)	• Internal review of progress on implementing Plan objectives • Consultations with Department of Environment, Climate and Communications	• Review internal systems • Consultations with Department of Environment, Climate and Communications
		• Number of spatial concentrations of health problems arising from environmental factors resulting from development permitted under the Plan	• No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan	• Consultations with the Health Service Executive and EPA	• Consultations with the Health Service Executive and EPA

Component	Code	Indicators	Targets	Sources	Remedial Action
		• Proportion of people reporting regular cycling / walking to school and work above 2016 CSO figures	• Increase in the proportion of people reporting regular cycling / walking to school and work above 2016 CSO figures	• CSO data • Monitoring of the Dún Laoghaire Rathdown County Council's Climate Change Action Plan 2019-2024	• Where proportion of population shows increase in private car use above CSO 2016 figures, the Council will coordinate with the Regional Assembly, the DHLGH, DECC and NTA to develop a tailored response.
		• Number of spatial plans that include specific green infrastructure mapping	• Require all local level land use plans to include specific green infrastructure mapping	• Internal review of local land use plans	• Review internal systems
Soil (and Land)	S	• Proportion of population growth occurring on infill and brownfield lands compared to greenfield (also relevant to Material Assets)	• Maintain built surface cover nationally to below the EU average of 4% as per the NPF • Achieve the 50% target for all new homes within and adjacent to the existing built-up footprint of Dún Laoghaire-Rathdown • To map brownfield and infill land parcels across the County.	• Environmental Protection Agency (EPA), Geoportal • Compilation of greenfield and brownfield development for the Department of Housing, Local Government and Heritage • AA/Screening for AA for each application	• Where the proportion of growth on infill and brownfield sites is not keeping pace with the targets set in the NPF and the RSES, the Council will liaise with the Regional Assembly to establish reasons and coordinate actions to address constraints to doing so.
		• Instances where contaminated material generated from brownfield and infill must be disposed of	• Dispose of contaminated material in compliance with EPA guidance and waste management requirements	• Internal review of grants of permission where contaminated material must be disposed of	• Consultations with the EPA and Development Management
		• Environmental assessments and AAs as relevant for applications for brownfield and infill development prior to planning permission	• Screen for and undertake environmental assessments and AA as relevant for applications for brownfield and infill development prior to planning permission	• Internal monitoring of grants of permission	• Review internal systems
Water	W	• Status of water bodies as reported by the EPA Water Monitoring Programme for the WFD	• Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status' • Implementation of the objectives of the second cycle of the River Basin Management Plan by 2021 (and subsequent iterations as relevant)	• EPA Monitoring Programme for WFD compliance	• Where water bodies are failing to meet at least good status this will be investigated with the DHLGH Water Section, the EPA Catchment Unit, the Regional Assembly and, as relevant, Irish Water to establish if the pressures are related to Plan actions / activities. A tailored response will be developed in consultation with these stakeholders in such a circumstance. • Where marine water bodies are failing to meet good ecological status, this will be interrogated with the Marine Institute and the DHLGH to establish if the pressures are related to RSES activities. A tailored response will be developed in consultation with the Marine Institute and DHLGH in such a circumstance. • Where planning applications are rejected due to insufficient capacity in the Wastewater treatment Plant (WWTP) or failure of the WWTP to meet Emission Limit Values, the Council will consider whether it is necessary to coordinate a response with the EMRA, EPA and Irish Water to achieve the necessary capacity.

Component	Code	Indicators	Targets	Sources	Remedial Action
		• Number of incompatible developments permitted within flood risk areas	• Minimise 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	• Where planning applications are being permitted on flood zones, the Council will ensure that such grants are in compliance with the Flood Risk Management Guidelines and include appropriate flood risk mitigation and management measures.
Material Assets	MA	• Programmed delivery of Irish Water infrastructure for all key growth towns in line with Irish Water Investment Plan and prioritisation programme to ensure sustainable growth can be accommodated • Number of new developments granted permission which can be adequately and appropriately served with waste water treatment over the lifetime of the Plan	• All new developments granted permission to be connected to and adequately and appropriately served by waste water treatment over the lifetime of the Plan • Where septic tanks are proposed, for planning permission to be only granted when applications demonstrate that the outfall from the septic tank will not – in- combination with other septic tanks– contribute towards any surface or ground water body not meeting the objective of good status under the Water Framework Directive • Facilitate, as appropriate, Irish Water in developing water and wastewater infrastructure • See also targets relating to greenfield and brownfield development of land under Soil and broadband under Population and Human Health	• Internal monitoring of likely significant environmental effects of grants of permission Consultations with the Irish Water • Department of Housing, Local Government and Heritage in conjunction with Local Authorities	• Where planning applications are rejected due to insufficient capacity in the Wastewater treatment Plant (WWTP) or failure of the WWTP to meet Emission Limit Values, the Council will consider whether it is necessary to coordinate a response with the EMRA, EPA and Irish Water to achieve the necessary capacity.
		• Proportion of people reporting regular cycling / walking to school and work above 2016 CSO figures	• Increase in the proportion of people reporting regular cycling / walking to school and work above 2016 CSO figures	• CSO data • Monitoring of the Dún Laoghaire Rathdown County Council's Climate Change Action Plan 2019-2024	• Where proportion of population shows increase in private car use above CSO 2016 figures, the Council will coordinate with the Regional Assembly, the DHLGH, DECC and NTA to develop a tailored response.
Air	A	• Proportion of journeys made by private fossil fuel-based car compared to 2016 National Travel Survey levels of 74% • NO_x, SO_x, PM10 and PM2.5 as part of Ambient Air Quality Monitoring	• Decrease in proportion of journeys made by private fossil fuel-based car compared to 2016 National Travel Survey levels • Improvement in Air Quality trends, particularly in relation to transport related emissions of NO_x and particulate matter	• CSO data • Data from the National Travel Survey • EPA Air Quality Monitoring • Consultations with Department of Transport and Department of Environment, Climate and Communications	• Where proportion of population shows increase in private car use above CSO 2016 figures, Council will coordinate with the Regional Assembly, DHLGH, DECC and NTA to develop a tailored response. See also entry under Population and human health above
Climatic Factors	C	• Implementation of Plan measures relating to climate reduction targets as provided for by Plan provisions including those provided for and referenced in Chapter 3 "Climate Action"	• For review of progress on implementing Plan objectives to demonstrate successful implementation of measures climate reduction targets as provided for by Plan provisions including those provided for and referenced in Chapter 3 "Climate Action"	• Internal monitoring of likely significant environmental effects of grants of permission	• Review internal systems
		• A competitive, low-carbon, climate-resilient and environmentally sustainable economy	• Contribute towards transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050	• Monitoring of the Dún Laoghaire Rathdown County Council's Climate Change Action Plan 2019-2024 • EPA Annual National Greenhouse Gas Emissions Inventory reporting • Climate Action Regional Office	• Where targets are not achieved, the Council will liaise with the Regional Assembly and the Dublin Climate Action Regional Office to establish reasons and develop solutions.
		• Share of renewable energy in transport	• Contribute towards the target of the Renewable Energy Directive (2009/28/EC), for all Member States to reach a 10% share of renewable energy in transport by facilitating the development of electricity		

Component	Code	Indicators	Targets	Sources	Remedial Action
			charging and transmission infrastructure, in compliance with the provisions of the Plan	• Consultations with Department of Environment, Climate and Communications	
		• Carbon dioxide (CO_2) emissions across the electricity generation, built environment and transport sectors	• Contribute towards the target of aggregate reduction in carbon dioxide (CO_2) emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation, built environment and transport sectors		
		• Energy consumption, the uptake of renewable options and solid fuels for residential heating	• To promote reduced energy consumption and support the uptake of renewable options and a move away from solid fuels for residential heating		
		• Proportion of journeys made by private fossil fuel-based car compared to 2016 levels	• Decrease in the proportion of journeys made by residents of the County using private fossil fuel-based car compared to 2016 levels	• CSO data • Monitoring of the Dún Laoghaire Rathdown County Council's Climate Change Action Plan 2019-2024	• Where trends toward carbon reduction are not recorded, the Council will liaise with the Regional Assembly and the Dublin Climate Action Regional Office to establish reasons and develop solutions.
		• Proportion of people reporting regular cycling / walking to school and work above 2016 CSO figures	• Increase in the proportion of people reporting regular cycling / walking to school and work above 2016 CSO figures	• CSO data • Monitoring of the Dún Laoghaire Rathdown County Council's Climate Change Action Plan 2019-2024	• Where proportion of population shows increase in private car use above CSO 2016 figures, the Council will coordinate with the Regional Assembly, the DHLGH, DECC and NTA to develop a tailored response.
Cultural Heritage	CH	• Percentage of entries to the Record of Monuments and Places, and the context these entries within the surrounding landscape where relevant, protected from adverse effects resulting from development which is granted permission under the Plan	• Protect entries to the Record of Monuments and Places, and the context of these entries within the surrounding landscape where relevant, from adverse effects resulting from development which is granted permission under the Plan	• Internal monitoring of likely significant environmental effects of grants of permission	• Where monitoring reveals visitor or development pressure is causing negative effects on designated archaeological or architectural heritage, the Council will work with Regional Assembly, Fáilte Ireland and the National Monuments Service and other stakeholders, as relevant, to address pressures through additional mitigation.
		• 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	• 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	• Consultation with Department of Housing, Local Government and Heritage	
Landscape	L	• Number of developments permitted that result in avoidable adverse visual impacts on the landscape, especially with regard to landscape and amenity designations included in Land Use Plans, resulting from development which is granted permission under the Plan • To seek to align with the National Landscape Strategy	• No developments permitted which result in avoidable adverse visual impacts on the landscape, especially with regard to landscape and amenity designations included in Land Use Plans, resulting from development which is granted permission under the Plan	• Internal monitoring of likely significant environmental effects of grants of permission	• Where monitoring reveals developments permitted which result in avoidable adverse visual impacts on the landscape, the Council will re-examine Plan provisions and the effectiveness of their implementation

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Comhairle Contae County Council