Uisce Éireann
Irish Water

SEA Report: January 2026

Draft Cork Wastewater Strategy

(Cork Metropolitan Area)

Strategic Environmental Assessment: Environmental Report

Tionscadal Éireann
Project Ireland
2040

6 CLEAN WATER AND SANITATION

Safeguarding our water for our future

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Acronyms and Abbreviations

Term	Definition	Term	Definition
AA	Appropriate Assessment	NBAP	National Biodiversity Action Plan
AQGs	Air Quality guidelines	NDP	National Development Plan
CFP	Common Fisheries Policy	NIS	Natura Impact Statement
CFRAM	Catchment-based Flood Risk Assessment and Management	NHA	National Heritage Area
CMA	Cork Metropolitan Area	NIAH	National Inventory of Architectural Heritage
CSO	Central Statistics Office	NPWS	National Parks and Wildlife Service
CWS	Cork Wastewater Strategy	NUTS	Nomenclature of territorial units for statistics
DAFM	Department of Agriculture, Food and the Marine	OPW	Office of Public Works
DECC	Department of the Environment, Climate and Communications	PAHs	Polycyclic Aromatic Hydrocarbons
DHLGH	Department of Housing, Local Government and Heritage	PAPs	Pathway Action Plans
DHPLG	Department of Housing, Planning and Local Government	pNHA(s)	Proposed National Heritage Area(s)
EEA	European Environment Agency	RBMP	River Basin Management Plan
EPA	Environmental Protection Agency	RMP	Record of Monuments and Places
EC	European Communities	RPS	Record of Protected Structures
EIA	Environmental Impact Assessment	SAC	Special Area of Conservation
ELC	European Landscape Convention	SEA	Strategic Environmental Assessment
ELV	Emission Limit Values	SMR	Sites and Monuments Record
ESDL	Environmentally sustainable discharge limits	SPA	Special Protection Area
EU	European Union	WFD	Water Framework Directive
GHG	Greenhouse Gas	UN	United Nations
GSI	Geological Survey Ireland	UNESCO	United Nations Educational, Scientific and Cultural Organisation
IAS	Invasive Alien Species	WFD	Water Framework Directive
IGH	Irish Geological Heritage	WHO	World Health Organisation
LAWPRO	The Local Authority Waters Programme	WSSP	Water Services Strategic Plan
LCA	Landscape Character Area	WWTP	Wastewater Treatment Plant
MSFD	Marine Strategy Framework Directive		

Term	Definition	Term	Definition
NAF	National Adaptation Framework		

Glossary

Glossary Term	Definition
AA Screening Report	The report which provides information on and assesses the potential for whether the proposed plan or project is likely to have a significant effect, either individually or in combination with other plans or projects, on European site(s) in view of the site's conservation objectives.
Agglomeration	An area where the population expressed in population equivalent, combined or not with economic activities, is sufficiently concentrated for urban wastewater to be collected and conducted to one or more urban wastewater treatment plants or to one or more final discharge points
Alien species	Animals and plants that are introduced accidentally or deliberately into a natural environment where they are not normally found.
Appropriate Assessment	An assessment required under the Habitats Directive to determine if the project or plan will adversely affect the integrity of a European site(s) either individually or in-combination with other plans and projects in view of the site's conservation objectives.
Assimilative Capacity	The ability for pollutants to be absorbed by an environment without detrimental effects to the environment or those who use of it.
Baseline Environment	The state of the environment in the absence of the Plan.
Biological Oxygen Demand	A measure of the amount of dissolved oxygen consumed by aerobic microorganisms to decompose organic matter in a water sample.
Catchment	The total area of land that drains into a watercourse.
Cumulative effect	The combined effects from several plans, programmes or policies.
Emission Limit Value	The maximum allowable concentration or quantity of a pollutant that can be released into the environment from a specific source over a given period.
Environmental Quality Standards	Legally or advisory defined limits for the concentration of substances in the environment that are intended to protect human health and ecosystems from harmful effects. They represent the environmentally sustainable levels for specific pollutants or the desired state of environmental quality.
Environmentally sustainable discharge limits	Environmentally sustainable discharge limits are regulations that set maximum allowable concentrations of pollutants in wastewater discharged into the environment to protect water quality and ecosystems. These limits are determined by both the technology available for treatment (technology-based) and the water quality standards of the receiving water (water quality-based).
European site	European sites refer to Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated under the EU Habitats and Birds Directives.
Horizon periods/ Planning horizons	Time periods over which it is possible to plan with reasonable accuracy. In the case of the draft CWS this is 2030, 2055 and 2080.
Invasive species	Non-native species that out-compete native species to the detriment of an ecosystem.

Glossary Term	Definition
Likely Significant Effect	Term adapted from Article 6(3) of the Habitats Directive ("likely to have a significant effect"), describing the type of effects which, if identified as potentially arising as a result of a project or plan, trigger an AA.
Mitigation	The implementation of measures designed to reduce the predicted effects of a plan or project on the environment.
Natura Impact Statement	A document which is a scientific assessment of the potential adverse effects of a proposed plan or project on a Natura 2000 site and forms part of the decision making of the AA.
Population Equivalent	Wastewater treatment plants are described in terms of their designed treatment capacity, which is generally expressed as population equivalents (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 population equivalents (PE). One person is considered to generate 60g of BOD per day (BOD is the 5 day biochemical oxygen demand); and 1 PE is defined as being equivalent to 60g of BOD per day.
RAMSAR site	An international designation for an important wetland site under the Ramsar Convention.
Strategic Environmental Assessment (SEA) Environmental Report	This is the stage 3 report for the SEA that documents the assessment undertaken of the plan against the SEA objectives finalised following the SEA Scoping consultation. The report set out how the environmental assessment has been integrated into the development of the plan and includes consideration of reasonable alternatives and cumulative effects and identifies for the plan proposals, the potential significant effects and mitigation measures required to address these or support meeting the SEA objectives. The SEA Environment Report is provided for public consultation alongside the draft plan.
SEA Screening statement	A summary of the SEA screening determining whether the proposed plan requires SEA.
SEA Scoping Report	The SEA report sets out the scope and objectives of the SEA.
SEA Post Adoption Statement	The document which details how environmental considerations have been integrated into the plan, how the environmental report and consultation responses were taken into account, the reasons for choosing the plan as adopted in light of reasonable alternatives considered and the measures to be taken into account to monitor or mitigate the likely significant effects.
Special Area of Conservation	An international designation for habitats and/or species under the EC Habitats Directive.
Special Protection Area	A site of international importance for birds, designated as required by the EC Birds Directive.
Strategic Environmental Objectives	Methodological measures against which the effects of the Plan can be tested.
Sub-catchment	Smaller areas than the CMA comprising interconnected WwTPs. Individual sub-catchments may also be interconnected
Zone of Influence	This is the area where an activity or pressure can directly or indirectly impact the environment or other systems. It defines the spatial area over which there

Glossary Term	Definition
	is potential for LSEs, taking account of the sensitivity and mobility of different QI/Special Conservation Interest, on species or habitats from a project or plan.

1 Introduction and Background

1.1 Background to Uisce Éireann

On the 1st of January 2014, through the Water Services Act (No. 1) 2013, Uisce Éireann (at that time known as Irish Water) assumed statutory responsibility for the provision of public water services and management of water and wastewater investment. Uisce Éireann's responsibility is to ensure that all of its customers (households and businesses) receive a safe and reliable water supply and have their wastewater collected, appropriately treated and returned safely to the environment. Figure 1-1 below shows some key facts about Uisce Éireann's wastewater services and infrastructure in the study area for the Draft Cork Wastewater Strategy (CWS).

Figure 1-1 Uisce Éireann statistics

Uisce Éireann's vision is for 'A sustainable Ireland where water is respected and protected, for the planet and all the lives it supports.'

1.2 Purpose of the CWS

The CWS aims to identify sustainable wastewater strategy projects for the expanding CMA through 2080. Delivering a sustainable, integrated wastewater strategy for the CMA requires a strategic approach to wastewater infrastructure planning. This approach will incorporate the needs for long-term sustainability and whole life value, maximising value from our wastewater assets, incorporating climate adaptation and mitigation, service resilience, biodiversity enhancement and wider societal benefits.

The Cork Metropolitan Area (CMA) (see Figure 1-1) is a major regional metropolitan area, identified as such in the National Planning Framework (NPF)[1] and in the Regional Spatial and Economic Strategy (RSES) 2020-2032[2] to ensure long term economic, environmental, and social progress. The CMA includes Cork City, its suburbs and the towns and rural areas in the immediate hinterland of the city of Cork as a single integrated unit. Cork City is the largest settlement within the CWS, comprising 14% of the regional population. It is situated on the Lee Estuary, which receives flows from the River Lee which drains the area. The CMA covers 820km² and has a population of approximately 310,000 as determined from the Census 2022. The NPF 2040 envisages that Cork will become the fastest-growing city region in Ireland with a projected 50% to 60% increase of its population in the period up to 2040. This projected population and associated economic growth will result in a significant increase in water supply and demands on the existing wastewater infrastructure within the area. The existing wastewater infrastructure is already being challenged to keep pace with the increased demand for new serviced land needed for housing, commercial developments and industry.

The CWS assesses wastewater treatment and network infrastructure in the CMA to identify what future investment will be required in the medium and long term. The scope of the CWS is to produce a report that will identify sustainable wastewater strategies and projects for the growing CMA. This aims to address challenges posed by climate change, supports economic and population growth and aims to avoid adverse environmental impacts over three horizon periods up to 2080 (2030, 2055 and 2080).

The strategy includes an analysis of the existing wastewater infrastructure along with data gathering, population and economic growth assessments, strategic environmental assessment, and consultation with interested stakeholders to identify medium and long-term solutions to the wastewater needs of the region. The strategy will be consistent with statutory obligations and regulatory drivers designed to meet both national and international environmental objectives outlined in the Water Framework Directive (WFD) and recast Urban Wastewater Treatment Directives (rUWWTD).

Typical solutions identified and assessed include the rationalisation of a number of wastewater treatment plants (WWTPs), increasing capacity to accommodate a growing population, and enhancing networks to meet new standards that limit stormwater overflow (SWO) operations and protect against climate-induced flood risks. Following recent major storm events in the CMA and the knock-on effects on UÉ assets, an examination on the resilience of energy and power security will form part of the CWS. To ensure the strategy remains relevant and representative of the changing environment, it will be regularly revised.

The CWS is subject to the Strategic Environmental Assessment Directive (SEA Directive) Council Directive 2001/42/EC, the Birds Directive (Council Directive 2009/147/EC) and the Habitats Directive (Council Directive 92/43/EEC). This document is part of meeting requirements under the SEA Directive and explains how they link to the requirements of the Birds and Habitats Directives in the sections below.

1.3 Strategic Environmental Assessment (SEA)

The SEA Directive (2001/42/EC) set out a process for the environmental assessment of plans and programmes and aims to provide for a high level of protection of the environment and to promote sustainable development. It also sets out specific requirements with respect to the Habitats Directive (92/43/EEC) and Birds Directive (2009/42/EC).

The SEA Directive is implemented in Ireland via the European Communities (EC) (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, as amended by the EC (Environmental Assessment of Certain Plans and Programmes) (Amendments) Regulations 2011 (known as the 'SEA Regulations'). Under these regulations, qualifying plans such as the CWS are required to be subject to SEA screening as a first step to determine if SEA is required. A screening review has been undertaken following the EPA 2021 screening guidance and this confirmed that the CWS requires a mandatory SEA and scoping consultation has been

[1] Government of Ireland: Project Ireland 2049 National Planning Framework First Revision, April 2025. Accessed June 2025. Available from https://cdn.npf.ie/wp-content/uploads/National-Planning-Framework-First-Revision-April-2025-1.pdf

[2] Southern Regional Assembly. 2020. Southern Regional Spatial and Economic Strategy. Accessed: March 2025. Available from: https://www.southernassembly.ie/regional-planning/rses

undertaken. The subsequent stages are assessment, public consultation and monitoring. The current stage is the assessment report for public consultation.

The aim is that the SEA process should influence and improve the plan. The process involves assessing the likely significant effects on the environment of implementing the plan and considering reasonable alternatives for achieving plan objectives. Combined and cumulative effects of the plan as a whole and with other plans and programmes are also included as part of the assessment. The SEA Regulations set out specific requirements for consultation with Environmental Authorities (listed in Section 1.5) and transboundary environmental authorities (if relevant) at the scoping stage and for public consultation on the draft plan and SEA Environmental Report (see Table 1.1 below on the phases for developing the CWS alongside the assessments). The SEA Environmental Report and consultation responses are also required to be taken into account in finalisation of the plan and for implementation monitoring.

Table 1.1 Work phases and consultations during the development of the CWS

Phase	Plans/Reports	Consultation
1	Issues Paper, SEA Scoping Report, AA Screening Report	Key stakeholder consultation including environmental authorities and, where relevant, transboundary environmental authorities
2	Draft CWS, SEA Environmental Report, Natura Impact Statement	Public consultation including the key stakeholder and environmental authorities mentioned above
3	Final CWS, SEA Statement, Addendum to Natura Impact Statement (if required) and AA Determination	Plans/ Reports updated to address consultation feedback

The SEA is undertaken as a four-stage process as detailed in Table 1.2.

Table 1.2 Stages of the SEA

Stage	Purpose and Requirements	Output
Stage 1: Screening	Prior to starting the SEA process, a plan or programme undergoes 'screening' to determine whether it requires SEA (also if SEA is to be undertaken on a voluntary basis).	SEA Screening Statement – Uisce Éireann (as the responsible authority) determined that SEA would be undertaken for the CWS (included with the Scoping Report)
Stage 2: Scoping	Consideration of the context and objectives of the SEA, provides information on baseline data, identifies relevant environmental issues and trends, and defines the parameters of the scope of the SEA for the purpose of consultation.	SEA Scoping Report.

Stage	Purpose and Requirements	Output
Stage 3: Identification, Prediction, Evaluation and Mitigation of Potential Effects Current SEA Stage	Within the context and parameters identified at the Scoping Stage, identification and evaluation of likely significant effects of the CWS is carried out, including consideration of alternatives and determination of measures to mitigate and monitor residual effects.	SEA Environmental Report – **this report.**
Stage 4: Consultation, Revision and Post-Adoption	Consultation with statutory consultees and the public. This may require changes to the CWS in light of responses. Statement on how the SEA and consultation process has influenced the final CWS. The statement is required to include an environmental monitoring plan – this is intended to provide feedback on significant environmental effects. This will also aid any future review / revision of the CWS and the SEA.	SEA Statement. Implementation of the monitoring programme.

1.3.1 SEA Screening

Stage 1 of the SEA process is SEA screening. This is based on the SEA regulations (S.I.435 of 2004) requirements Section 9 (1) (a), which states that environmental assessment shall be carried out for all plans and programmes:

"which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, and which set the framework for the future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive."

The CWS has been screened following the Environmental Protection Agency's (EPA) Good Practice Guidance on SEA Screening[3] published December 2021. The screening concluded that the CWS is a type of water management plan which sets a general framework influencing the future development consent of relevant projects identified from these plans that may require EIA. Uisce Éireann as the competent authority, has determined that SEA is required on the basis of the EPA 2021 screening guidance applicability tests. Therefore, the Cork Wastewater Strategy is to be subject to SEA in accordance with the regulations.

1.3.2 SEA Scoping

The SEA Scoping Report is the output of Stage 2 of the four-stage SEA process. The SEA scoping process aims to:

- Outline what the plan is expected to cover and how the draft plan will be developed;
- Outline the existing environmental baseline – describe the environmental characteristics of the study area and to present the initial understanding of the key environmental issues relating to the CWS;

[3] Environmental Protection Agency (EPA). 2021. SEA Screening Good Practice 2021. Accessed: March 2025. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/sea-screening-good-practice-2021.php

- Undertake a review of legislation, policies and plans – outline the potential external influences on the CWS and the environment in which it is proposed through a review of legislation, policies and plans;
- Propose a framework of Strategic Environmental Objectives (SEOs) and set out a draft SEA methodology, including outlining how alternative approaches for the CWS that will be considered, identify potential interrelated plans and programmes, and outline how cumulative effects will be addressed;
- Provide the Scoping Report for consultation and seek feedback from stakeholders on the proposed approach to the SEA of the CWS.

The SEA scoping process has been undertaken and the scoping report and consultation responses from stakeholders have informed the environmental assessment and development of the CWS.

1.3.3 SEA Environmental Report

This SEA Environmental Report is the main documented output of Stage 3 of the SEA process. The SEA Environmental Report presents information on the SEA and the likely environmental issues related to the implementation of the CWS as a whole. The assessment undertaken includes assessment of alternative options and approaches throughout the development of the CWS, assessment of the recommended approach with its cumulative and in combination effects and identification of mitigation measures to address potential significant effects and support achievement of SEA objectives. A draft monitoring plan is included as required by the SEA regulations to provide a basis for feedback and action as the CWS is implemented.

This report has been prepared having regard to the SEA Directive (2001/42/EC) and its provisions that are transposed into Irish law by European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004 as amended in 2011). This SEA Environmental Report, together with its Appendices, is published alongside the draft CWS to support the consultation process.

1.4 Appropriate Assessment (AA)

In addition to compliance with the SEA Directive, the preparation and implementation of the CWS must comply with the requirements of the EU Birds Directive and EU Habitats Directive.

Under the European Communities (Birds and Natural Habitats) Regulations 2011 as amended (the 'Habitats Regulations') there is a requirement, under regulation 42, for all public authorities to conduct a screening for Appropriate Assessment (AA). AA screening is the preliminary assessment of whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a European site in view of a site's conservation objectives. If the screening determines that likely significant effects cannot be excluded, then Uisce Éireann must determine that an AA is required. If an AA is required, Uisce Éireann must prepare a Natura Impact Statement (NIS), which is a report consisting of the scientific examination of a plan or project individually, or in combination with other plans or projects, in view of the conservation objectives of the site or sites, and any further information required to carry out the AA. The CWS, SEA and AA/NIS will be developed in parallel through an iterative process.

The Habitats Directive requires that if a plan, policy or programme is likely to have a significant effect on one or more European sites (that is, a Special Area of Conservation (SAC) or Special Protection Area (SPA), also referred to as "Natura 2000" Network), either alone or in combination with other schemes, plans or projects, then it must be subject to AA.

Uisce Éireann is the relevant 'public authority' as identified in the transposing (EC Birds and Natural Habitats) Regulations 2011. An initial AA screening has been undertaken for the CWS to determine if it is likely to have a significant adverse effect on a Natura 2000 site, either individually or in combination with other plans or projects.

The screening for Appropriate Assessment (AA) of the CWS identified that all possible options for wastewater management arising from the CWS had the potential to give rise to Likely Significant Effects (LSEs) on

European sites. The draft CWS AA Screening Report was published for consultation in May 2024 alongside the SEA Scoping Report and the Issues Paper.

An NIS has been prepared to support the AA of the draft CWS. This NIS has been prepared by Jacobs for Uisce Éireann having regard to the requirements of the EU Habitats Directive (Directive 92/43/EEC) (the Habitats Directive) on the Conservation of Natural Habitats and of Wild Fauna and Flora in particular the provisions of Article 6(3), as transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) and Section 177U(1) of Planning and Development Act 2000 (as amended). As the national public water authority, the responsibility for carrying out the AA of the CWS lies with Uisce Éireann. The NIS for the draft CWS is being released for public consultation along with the draft CWS and other supporting documentation. The NIS will also be published alongside the final CWS and an AA Determination, which will set out the conclusions of the Appropriate Assessment carried out by Uisce Éireann, as informed by the NIS, public consultation and other prescribed matters as appropriate.

There is a degree of overlap between the requirements of the SEA and AA and in accordance with best practice, an integrated approach is being applied between the development of the CWS, the SEA and the AA, such as sharing of baseline data, cohesive assessment of the potential ecological effects of the CWS on European sites and clarification on more technical aspects of the CWS. These processes together have shaped the development of the CWS. The SEA takes account of the findings of the AA in relation to potential effects and mitigation relevant for Natural 2000 sites and also covers aspects of biodiversity, habitats and species that are not required to be covered in the AA.

1.5 Consultation

The CWS is being developed across two phases of consultation.

An initial statutory consultation (Consultation1) on the SEA Scoping Report, the AA Screening Report and Issues Paper has been undertaken. The first consultation included public consultation and engagement with key statutory and regulatory stakeholders.

In line with Article 9 (5) of the SEA Regulations (S.I. No. 435 of 2004), this SEA Scoping Report was issued to the following statutory Environmental Authorities for their review and comment:

- The Environmental Protection Agency (EPA);
- The Department of Agriculture, Food and the Marine (DAFM);
- The Department of Housing, Local Government and Heritage (DHLGH) including the Development Applications Unit; and
- The Department of the Environment, Climate and Communications (DECC).

In addition, a copy of this SEA Scoping Report was published online.

Feedback received on the SEA Scoping Report and the AA Screening Report, has been reviewed and taken into account for the preparation of the draft CWS, SEA Environmental Report and NIS. The issues raised and the response to them are summarised in this SEA Environmental Report in Section 3 and the detailed consultation responses are provided in the draft CWS, Appendix 7.

The environmental authorities/consultees and the public are being consulted again at Stage 3 (Consultation 2) – SEA Environmental Report as required under the SEA Regulations alongside the draft CWS and NIS (AA process).

1.6 Structure of the SEA: Environmental Report

This SEA Environmental Report is organised as follows:

- **Section 2** Development of the CWS – This section outlines the proposed scope of the CWS and how the SEA process and AA are integrated with its development.
- **Section 3 Consultation –** summary of phase 1 scoping consultation

- **Section 4 Review of Policies, Plans and Programmes** – An outline of the key relevant policies and plans to be considered and reference to a comprehensive review informing the development of SEA objectives and the approach to SEA. This section covers the national and regional policies, plans and programmes that are considered in the development and assessment of the draft CWS. Key relevant Uisce Éireann's plans and programmes in place or in progress are also summarized in **Appendix A.**
- **Section 5 Baseline and Key Issues** – The existing baseline environment is described along with key pressures and trends to identify key considerations relevant for assessing the beneficial and adverse impacts of the CWS and to consider the likely evolution of the existing baseline environment without the draft CWS in place. The scope of the topics and key aspects to be covered in the SEA are set out.
- **Section 6 SEA Methodology** – This section provides the methodology to the SEA, including the SEA objectives, that are proposed to be used in the SEA of the draft CWS as set out in the scoping report and updated following scoping consultation. This includes the approach to assessing alternative approaches and cumulative effects and identification of mitigation.
- **Section 7 Assessment of the draft CWS Alternatives** summary of the assessment of option and feasible approach alternatives which is set out in detail in **Appendix B.**
- **Section 8 Cumulative Effects Assessment** – Including intra-plan effects and inter-plan effects with other plans.
- **Section 9 Assessment of draft CWS Recommended Approach** overall assessment of the Draft CWS proposals against the SEA objectives.
- **Section 10 Mitigation and Monitoring Plans** – Covering proposed actions to be undertaken for the plan implementation and providing recommendations for Tier 2 plans and downstream project level mitigation and monitoring.
- **Section 11 Next Steps** – This section identifies what happens next in the SEA process following the consultation on the SEA Environmental Report.
- **Appendices** Supporting information: policy and plan review and environmental assessment of options and approaches.

2 Development of the CWS

2.1 CWS Vision and Objectives

The vision of the CWS is to deliver a sustainable strategy that will protect public health, safeguard our environment and facilitate growth to 2080. Having an overview of wastewater asset investment needs is essential to plan sustainably for the long term. The strategy will provide:

- Positive, collaborative engagement with regulators and stakeholders to accelerate achievement of environmental objectives;
- Anticipating future environmental and growth needs with timely and appropriately phased delivery;
- Appropriate risk assessment and management to reduce stress on assets and ensure resilience and good levels of service;
- Measures to meet the requirements of the recast UWWTD and Integrated Urban Wastewater Management Plans;
- Our part in delivering Water Framework Directive objectives by meeting compliance with our Wastewater Discharge Authorisations;
- Adaptive planning that allows scenario testing, considering the whole asset lifecycle and ensures that future needs can be met efficiently, effectively and sustainably through capital or operational activities;
- Proposals for enhanced treatment capacity and efficiency while reducing pollution and improving water quality.
- Strengthening infrastructure resilience to climate change through comprehensive risk assessments, adaptation strategies, infrastructure design and retrofitting to withstand extreme weather events and sea-level rise.

The CWS will deliver a sustainable wastewater management strategy that will address the needs of wastewater infrastructure, offering achievable strategic and sustainable wastewater options, resulting in better overall performance and providing capacity to meet water demand and support economic growth for the CMA. The key objectives of the CWS are as follows:

- Development of a sustainable wastewater strategy for the CMA consistent with the EU WFD and recast UWWTD Regulations.
- Outline the requirements for wastewater treatment and drainage infrastructure capable of meeting the demands of the study area in the context of current Development Plans, the NPF, the Southern Regional Spatial and Economic Strategy (RSES) 2020 and longer-term development potential of the area up to year 2080.
- Identification of alternative solutions for effective management of wastewater to protect and enhance the environment, support social and economic growth that are consistent with UÉ WSSP 2050 among other UÉ plans and strategies.
- Evaluation of alternative solutions and identification of the optimum wastewater drainage solutions.
- To develop an adaptable strategy where outcomes are expected to be linked to volatile influences like climate and population change.

2.2 Structure of the draft Cork Wastewater Strategy

In addition to the vision aims and objectives, the Draft CWS presents:

- Strategic challenges for including for economic growth, protecting and restoring the natural environment, alignment with other plans and strategies, and need to address risk and resilience,

- Stakeholder collaboration including feedback on consultation 1 and approach to consultation 2
- Approach methodology including understanding of current infrastructure performance, receiving water environment, WwTP and network performance, progress and
- Future performance consideration for infrastructure resilience, operational and environmental and social considerations
- Network modelling methodology
- Water quality modelling
- Optioneering and solution development and results
- Implementation of the strategy and monitoring and evaluation

The draft CWS report is also supported by,

- Baseline modelling and network assessment
- Assessment of existing WWTPs
- WWTPs flow and loads assessment
- Network modelling
- Water quality modelling
- Optioneering and solutions development
- Consultation 1 responses

The environmental assessments of the draft CWS, the SEA Environmental Report and NIS are also presented as appendices to the draft CWS.

2.2.1 Option Development

The draft CWS Optioneering and Strategy Development process for the Cork Metropolitan Area (CMA) aims to identify optimal drainage and treatment solutions for 2030, 2055, and 2080. This process employs a 5-stage assessment methodology, balancing functionality, whole-life cost, and sustainability. An overview of these 5-stages is included in Section 8 of this report in relation to the environmental assessments undertaken.

The draft CWS Recognised the significance of interactions and interdependencies among all individual catchments within the CMA, and the CMA was segmented into smaller, interconnected sub-catchments, each comprising of multiple WWTPs as shown in Figure 2-1 and Table 2.1 below. Agglomerations not currently served by a WWTP but that are incorporated into the overall strategy were included here such as Monard, Ballymore and Leamlara to ensure there are no remaining agglomerations with untreated wastewater in the study area. The results for each WWTP were independently evaluated and analysed, with the Feasible Approaches being determined by considering the entire sub-catchment, accounting for the dependencies and interactions among all WWTPs within that area.

Table 2.1: List of Sub catchments within the CMA

Sub Catchment	Agglomerations
Sub Catchment 1	Blarney WWTP
	Courtbrack WWTP
	Dripsey WWTP
	Inniscarra WWTP
Sub Catchment 2	Kileens WWTP

Sub Catchment	Agglomerations
	Monard
Sub Catchment 3	Carrignavar WWTP
	Grenagh WWTP
	Whitechurch WWTP
Sub Catchment 4	Knockraha WWTP
	Watergrasshill WWTP
Sub Catchment 5	Carrigrennan WWTP
Sub Catchment 6	Ballygarvan WWTP
	Halfway WWTP
	Minane Bridge (River Valley) WWTP
Sub Catchment 7	Ballincollig WWTP
	Killumney WWTP
Sub Catchment 8	Cork Lower Harbour WWTP
Sub Catchment 9	Carrigtwohill WWTP
	Midleton WWTP
Sub Catchment 10	Ballymore
	Cloyne WWTP
	North Cobh WWTP
	Saleen WWTP
	Whitegate – Aghada WWTP
Sub Catchment 11	Ballincurrig WWTP
	Leamlara
	Lisgoold North WWTP
	Lisgoold South WWTP

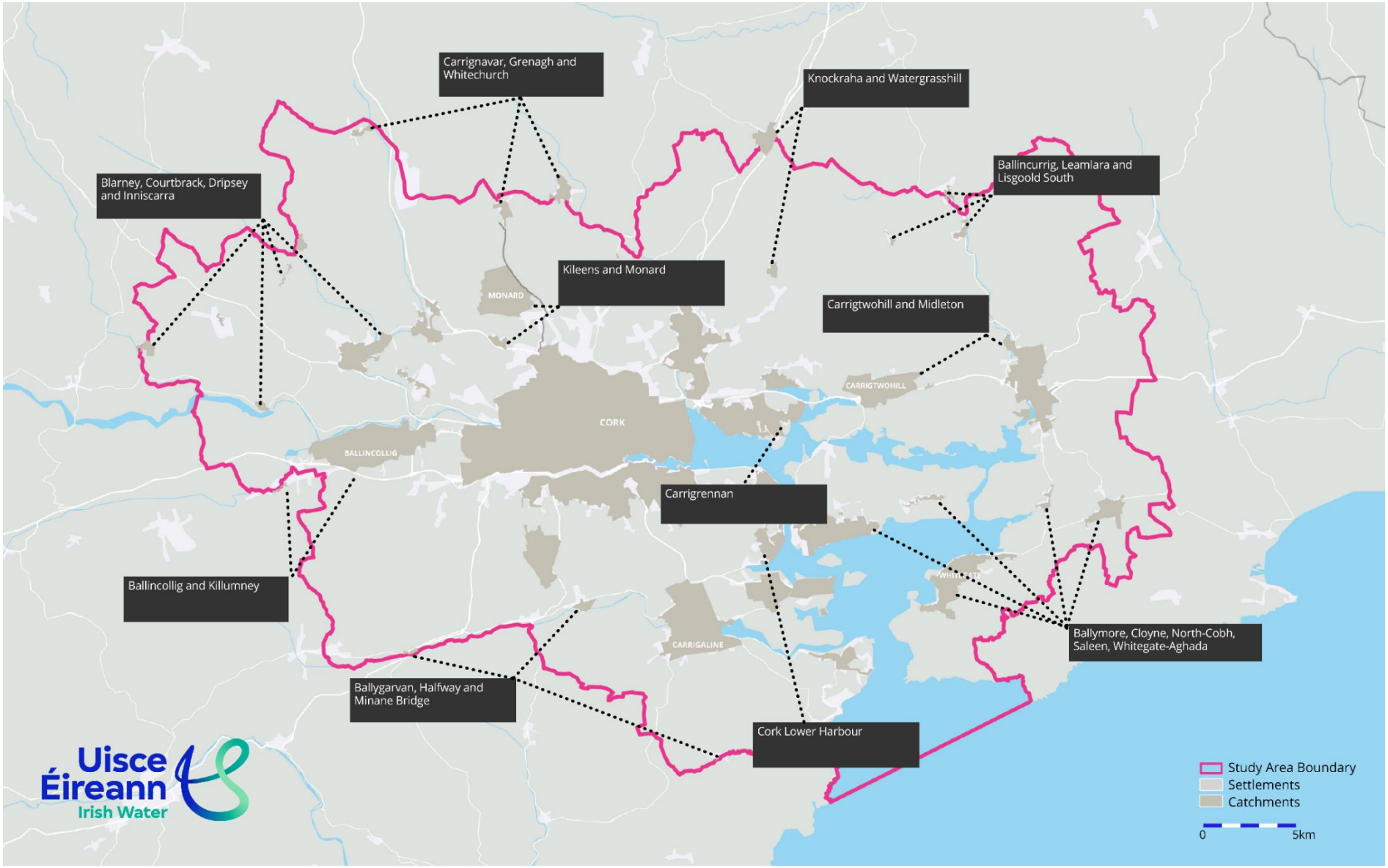

Figure 2-1 Sub catchment locations

The strategy's Options Development and Solutions Approach is set out in detail in the draft CWS, Appendix 6.

Following the optioneering phase, several Feasible Approaches were identified for each sub-catchment. These Approaches incorporated combinations of the highest-scoring options derived from a Mutli Criteria Analysis (MCA). Each potential Feasible Approach underwent thorough analysis and consideration, taking into account the broader context of the CWS. This approach ensured that the final Recommended Approach was not only optimal for the individual sub-catchment but also aligned with and supported the overarching objectives of the CWS. This approach ensured a holistic assessment of the region's wastewater management needs and opportunities.

Following the optioneering process, 30 Feasible Approaches were developed to address issues at WWTPs across the 11 sub catchments. It is important to note that Feasible Approaches were considered at a strategy level, and the assessment of the approaches are desktop-based. Any Approaches progressed following the CWS will need to be considered in more detail at the project level. If project-level assessments confirm the feasibility of the Recommended Approach, the process will move forward with detailed design, planning applications, and procurement processes as appropriate. This would include further assessment under the Habitats Regulations as necessary.

In the event that project-level assessments determined that a Recommended Approach would not be feasible, consideration will be given to other feasible approaches outlined in the CWS. Changes to the Recommended Approach that only impact a single wastewater catchment area will not necessitate a variation to the overall strategy; instead, the change will be assessed at the project level. This approach allows for refinements to individual projects or closely related projects within a catchment area to be considered within their own environmental assessments, without systemic impacts on the wider CWS.

In addition to the Feasible Approaches for the WWTPs in each sub-catchment, the development of Feasible Approaches for the region also encompassed potential wastewater network interventions across the CMA. These critical interventions are designed to mitigate the volume and frequency of discharges from storm water overflows and reduce out-of-sewer flooding within the study area. The evaluation of a network intervention approach was conducted with careful consideration of each catchment's unique characteristics, drawing upon previous studies, network modelling results, and the collective expertise of CWS technical specialists and relevant stakeholders. The proposed network intervention for the wastewater network within the CMA is common amongst the Feasible Approaches. Further details on the Feasible Approach developed for the wastewater network, including details on specific wastewater pumping stations and storm tanks referenced are included in Appendix 6 Optioneering and Solutions Development Report and Appendix 4 Network Modelling Report.

2.3 CWS and the Hierarchy of Plans

2.3.1 Hierarchy of policy and plans

The **Water Framework Directive (WFD)** is the overarching Directive relating to water policy in the EU. Under this, there are a number of national level plans produced by Uisce Eireann to provide a framework for wastewater management services across Ireland (Figure 4-1) as outlined below:

The **Water Services Policy Statement** (WSPS) provides the framework within which our funding and investment plans are agreed. It sets out the priorities of Government regarding the provision of water services during the period of a Strategic Funding Plan[4].

The **Water Services Strategic Plan** (WSSP) sets out our objectives for the 25 years following the approval of the plan by the Minister and the means by which Uisce Éireann will achieve them. This plan was approved and will be taken into account in the development of the CWS.

[4] Uisce Eireann. 2019. Strategic Funding Plan 2019-2024. Accessed: March 2025. Available from: https://www.water.ie/projects/strategic-plans/irish-water-strategic-fun

The **Strategic Funding Plan** (SFP)[4] presents the arrangements that Uisce Éireann propose to make and the measures that Uisce Éireann propose to deliver over a five-year period to implement the objectives of the CWS. The SFP is approved by the Minister for Housing, Local Government and Heritage. The latest SFP covered the period from 2019 to 2024.

Whilst the SFP sets out the planned level of operational and capital expenditure over this period, the actual allowed operational capital expenditure is decided on by the economic regulator, the Commission for Regulation of Utilities through the **economic regulatory process**.

Environmental regulation of public wastewater services is by the EPA who provide Uisce Éireann's wastewater discharge authorisations.

The CWS is a regional level plan which provides the strategy for wastewater management in the CMA over the period 2025 to 2080, including the identification of local level projects to be delivered within this time frame. The CWS will be influenced by Uisce Eireann national level plans and other relevant regional level plans including the **National Wastewater Sludge Management Plan**.

A variety of strategic Tier 2 strategic plans and supporting strategies guide how Uisce Éireann deliver their work, beneath which sit Tier 3 specific programmes, plans and projects which Uisce Éireann implement across the country.

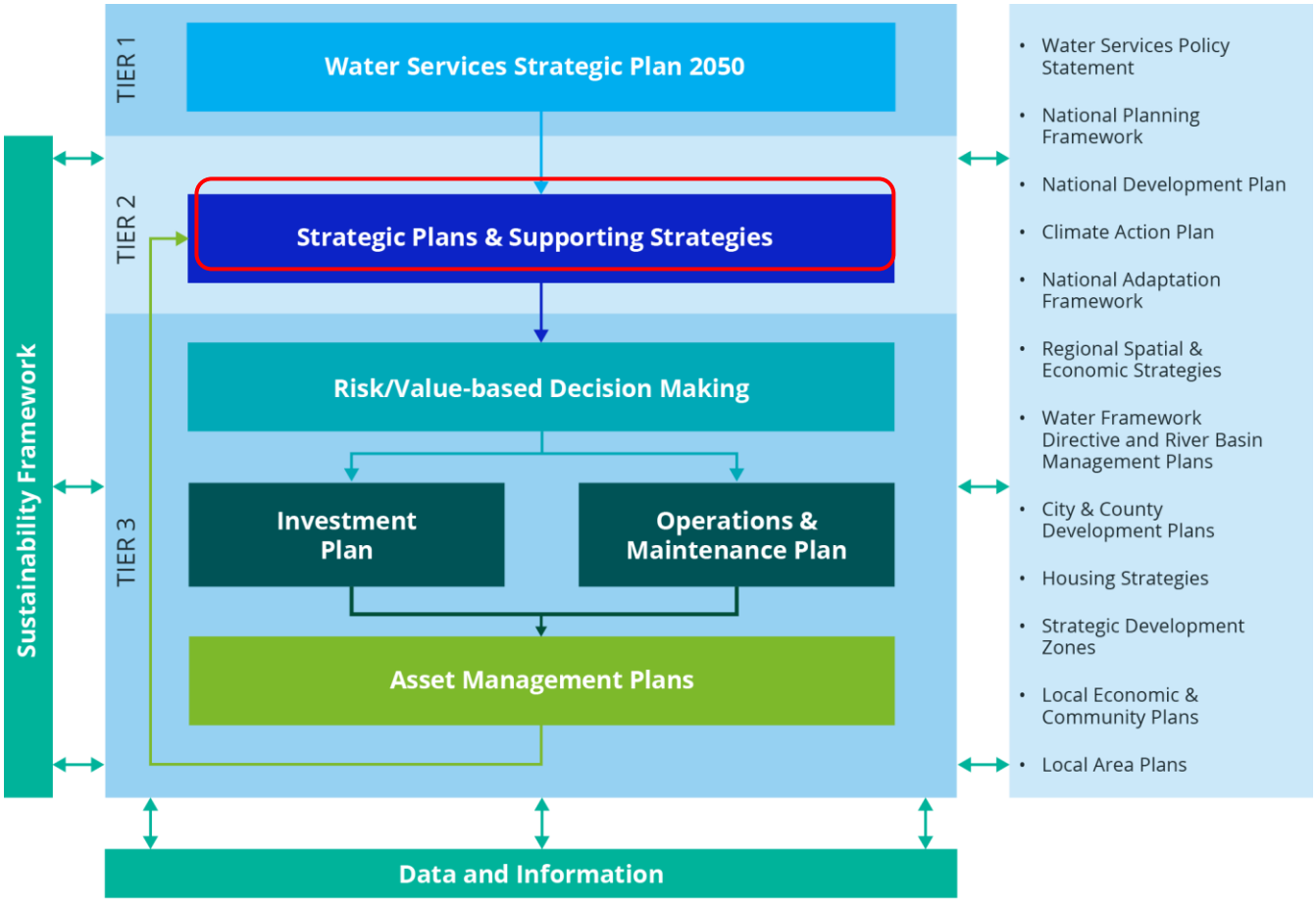

Figure 2-2: Uisce Éireann Framework and CWS (within red outlined level)

2.4 Issues Paper for the CWS

An Issues Paper was published for the initial scoping stage consultation. It summarises the key issues influencing the Cork Metropolitan Area and the approach taken to address the need for sustainable drainage options and wastewater infrastructure in the CMA. The Issues Paper was made available at the following weblink: www.water.ie/cws

2.5 Draft CWS and the environmental assessments

The draft CWS has been developed iteratively to the environmental assessments undertaken as illustrated in Figure 2-3.

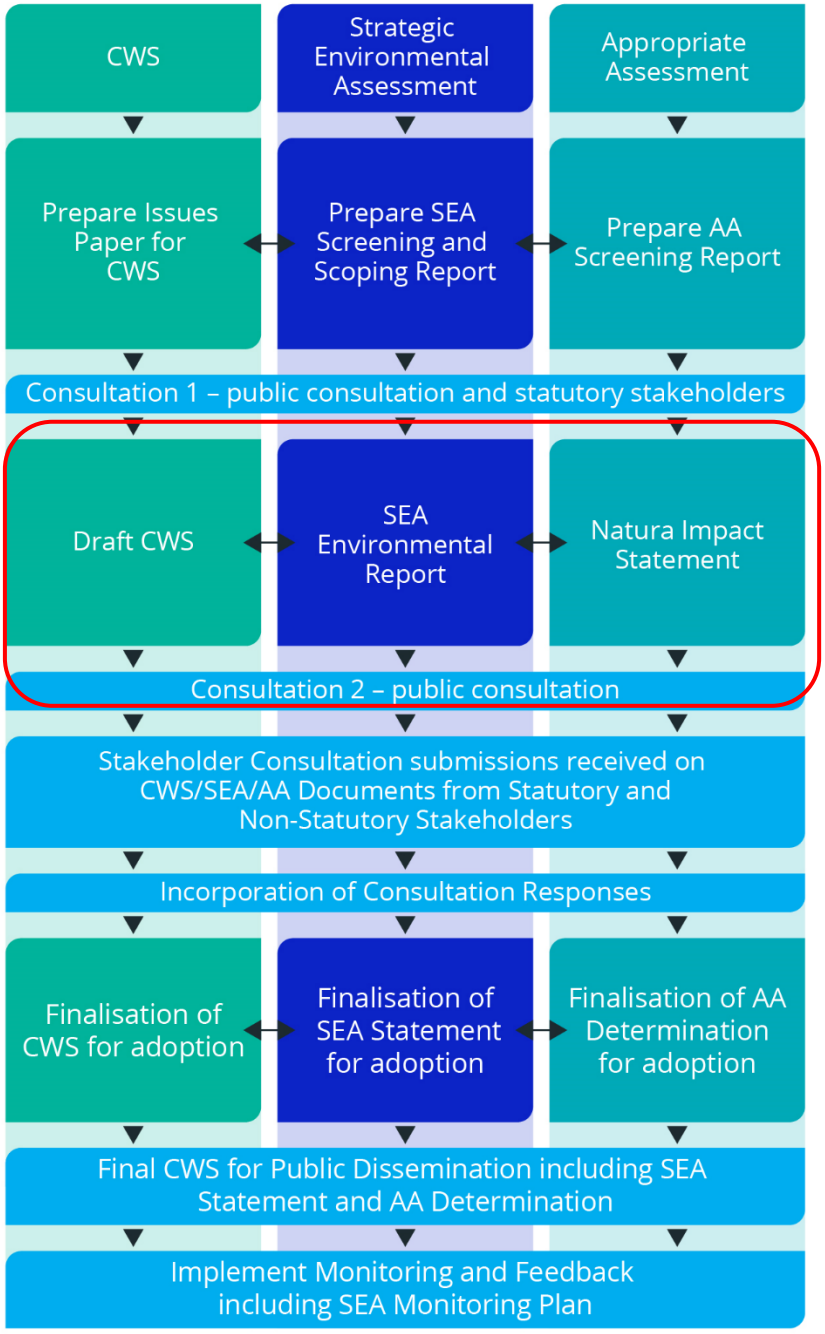

Figure 2-3 Development of CWS with the Environmental Assessments

3 Consultation

3.1 Consultation objectives

Public consultation is a key element in ensuring members of the public and all interested parties have the chance to be part of the development of the CWS. Effective stakeholder engagement and consultation is part of the process required under the SEA regulations and is recognised as playing a key role in the success of the strategy (see Figure 3-1). Transparent communication, public consultations, and feedback mechanisms help incorporate diverse perspectives including consideration of views on environmental and social aspects of the wastewater infrastructure proposals.

The development of the draft CWS involves ongoing engagement with environmental authorities and the public to ensure a transparent, inclusive, and well-informed process. The overall process is shown in Figure 3-2. This engagement provides insights and data early in the process, while public consultation helps build understanding and support for wastewater management. The engagement strategy aims to address concerns promptly, promote UÉ's vision, and ensure the CWS reflects the needs of all stakeholders.

Figure 3-1: The Purpose of Engagement

3.2 Insights from Consultation 1

Public Consultation 1 ran for eight weeks in Summer 2024. Key stakeholders, UÉ regulators and statutory bodies were targeted on the Issues Paper and SEA Scoping Report and Appropriate Assessment Screening. The Issues Paper was drafted to support the development of the draft CWS. The topics identified in the Issues Paper, along with UÉ's vision, are the foundations that helped us define long-term objectives presented in the draft CWS. The aim was to engage with our stakeholders to ensure we identified the issues important to them so that a robust strategy is developed to represent our shared values

The purpose of this initial consultation was to:

- enable key internal and external stakeholders to give feedback on the development of CWS,
- manage expectations of what the CWS will include,
- initiate connection with key, regulatory and statutory stakeholders on the plan,
- identify potential concerns that need to be addressed in the draft CWS and associated environmental reports.

Seventeen submissions were received. Submissions revealed several key concerns among stakeholders, primarily focusing on water quality preservation, environmental protection measures, and climate change impacts on wastewater management. Submissions have been broadly summarised into 10 main themes:

- Study Area

- Uisce Éireann Infrastructure
- Population, growth and demand
- Protection of the water environment
- Timeline and ambition
- Legislative compliance and Plans, Programmes and Policies interactions
- SEA objectives, environmental challenges and opportunities
- Public engagement, communication, consultation
- Strategy and SEA interactions, Monitoring and Mitigation Plans
- Data sources and knowledge gaps

A summary of the feedback and comments arising from Consultation 1 is included in the draft CWS Appendix 7.

Responses to the comments provided include additions and amendments to the baseline environment and updates to the policy and plan review for the environmental assessment and included in this SEA Environmental Report. In addition In response to concerns raised, the draft strategy has been developed to incorporate environmental safeguards and network resilience measures. These strategic elements aim to address stakeholder priorities while ensuring the robustness and adaptability of wastewater management systems in the face of future challenges.

3.3 Consultation 2 and Future Steps

Consultation 2 is a public consultation scheduled for January 2026 and will run for a minimum of eight weeks. The purpose of the statutory consultation is to provide an opportunity to provide feedback on the draft Cork Wastewater Strategy, SEA Environmental Report and NIS.

The statutory consultation aims to inform stakeholders on the process applied to the develop the draft CWS Recommended Approaches and proposals for the strategy implementation and monitoring alongside the environmental assessments undertaken. This is part of the process of ensuring that the views and concerns of the community are considered in strategy planning, environmental assessments and development.

Following the closing of the Public Consultation 2, a Post Consultation Report will be published which will outline all engagement that was undertaken with stakeholders and respond where needed in the finalisation of the CWS and undertake further environmental assessment on the final CWS where required. The SEA Statement will also summarise how consultation comments have been addressed and how the environmental assessment has influence the final strategy.

The final CWS will be published in Q2 2026 with the Post Consultation Report and final SEA and AA reports.

Figure 3-2 Consultation Roadmap

4 Review of Policies, Plans, and Programmes

4.1 Introduction

The SEA Directive states in Article 5(1) of Annex 1 that the environmental assessment must identify "the environmental protection objectives, established at International, European Union or national level, which are relevant to the plan or programme, or modification to the plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation".

In accordance with this requirement, a review of other plans, policies and programmes and the legislative framework is an important part of setting the context for the SEA and the CWS. The review also identifies wider environmental protection objectives. These may be plans and programmes at an international (European), national (including cross-boundary), regional or sub-regional level, commensurate with the scope of the CWS. The review aims to identify the relationships between the CWS and these other documents i.e., how the CWS could be affected by the other plans and programmes' aims, objectives and/or targets, or how it could contribute to the achievement of their environmental and sustainability objectives.

The review has been undertaken in two stages firstly as a comprehensive review of plans, policies to identify those directly relevant for the CWS and SEA (Appendix B) and a further review focusing on the how those identified can inform the scope of the baseline and the assessment including the SEA Objectives. Those considered most influential are also outlined in more detail in Section 4.2 in keeping with the EPA's guidance[106] recommending focus on a few key policy and plans. Figure 4-1 identifies how the CWS relates to the key national, regional, and local level plans, policies and strategies.

Hierarchy and interaction of plans and projects is presented in Figure 4-1.

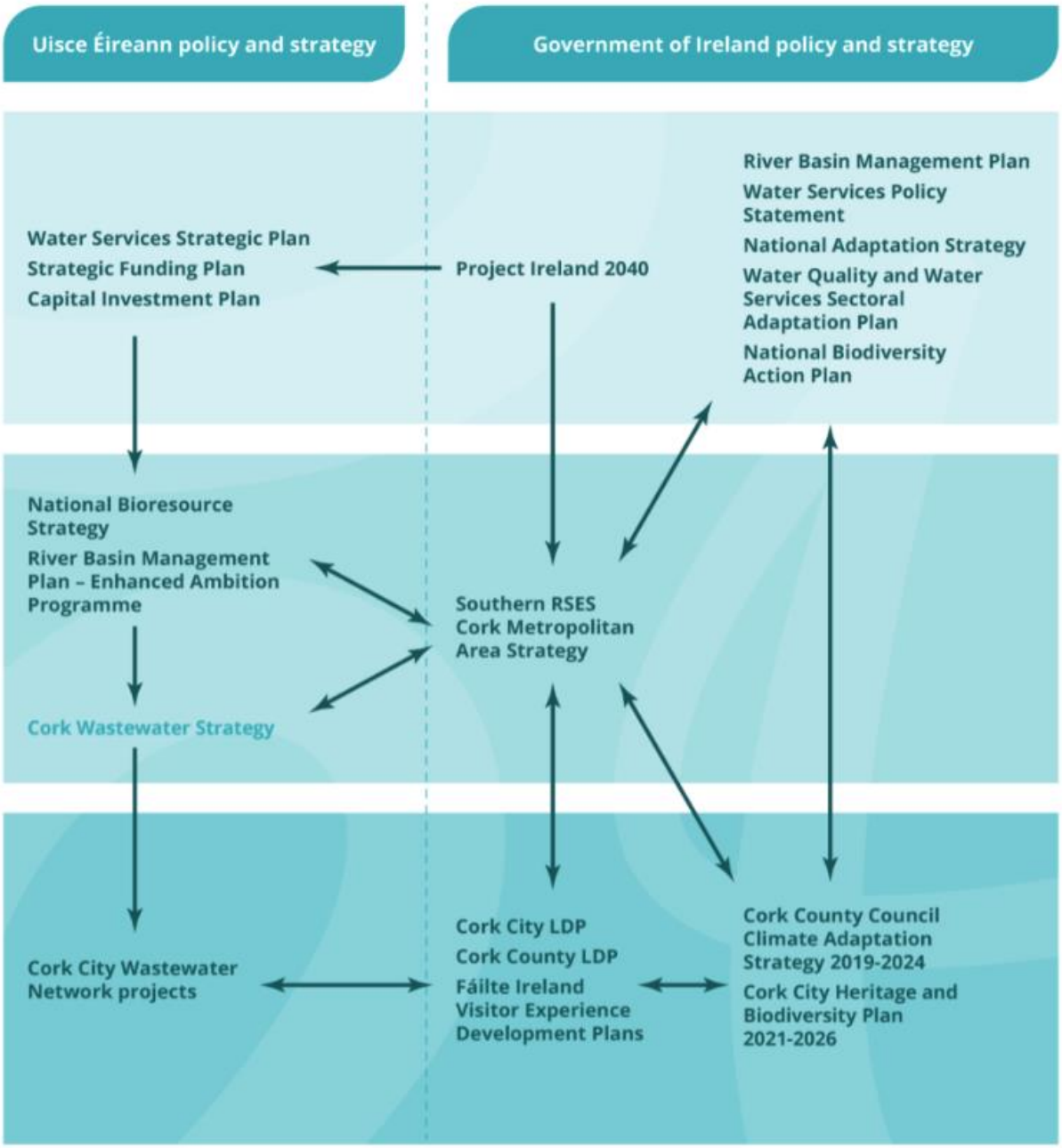

Figure 4-1 Hierarchy and interaction of plans and projects

4.2 Key Influences and interactions

The key legislation, policies and plans that need to be taken into account in the CWS and the environmental assessment are considered below under the following headings (note a comprehensive list of relevant plans is provided in Appendix B):

- Water resources and quality;
- Climate change;
- Biodiversity;
- Circular Economy; and
- Land use and planning.

4.2.1 Water Resources and Water Quality Plans and Policies

Water Framework Directive and River Basin Management Plan

The EU WFD (Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy) and the River Basin Management Plan (RBMP), required under WFD, are of relevance to the development of the CWS as they set the framework for managing Uisce Éireann's activities relating to pollution from wastewater discharges. They strongly influence investments in wastewater infrastructure to address inadequately treated wastewater, deficits and future growth needs.

The WFD establishes a standard European wide strategic approach to managing surface water, groundwater, transitional and coastal waterbodies, wetlands and to meeting common environmental objectives.

The Directive is linked to, and reinforces, other EU environmental directives including directives relating to the protection of biodiversity (Birds and Habitats Directives), directives related to specific uses of waters (drinking water, bathing waters and urban wastewater directives) and to directives concerned with the regulation of activities undertaken in the environment (Industrial Emissions and Environmental Impact Assessment directives). The Nitrates Directive also forms an integral part of the Directive and is one of the key instruments in the protection of waters against agricultural pressures.

European Union Member States implement the WFD through RBMPs in six-year cycles. This process allows for assessment, planning, implementation, and review at regular intervals. Ireland's approach to water quality management has developed over the first and second RBMPs and now evolved into the third cycle to protect and improve water quality nationally and locally.

Under Article 4(1)(a) of the WFD, Ireland must adopt the necessary measures to achieve the objectives of non-deterioration, preservation and enhancement of the status of bodies of water by making the programmes specified in the RBMP operational for the achievement of the WFD environmental objectives. Both the obligations to enhance, and to prevent deterioration of the status of bodies of water, are designed to attain the qualitative objectives pursued by the EU legislature, namely the preservation or restoration of good status, good ecological potential and good chemical status of surface waters.

The WFD environmental objectives for surface waters include the following:

- Prevent deterioration;
- Aim to achieve good ecological status (or for Artificial or Heavily Modified waterbodies, good ecological potential);
- Aim to achieve good chemical status;
- Aim to reduce/cease emissions, discharges and losses from priority substances and priority hazardous substances; and
- Meet protected area objectives where relevant.

More details on the WFD, the current baseline and key trends for the water environment are presented in Chapter 5 of this SEA Environmental Report.

The RBMP for Ireland sets out how organisations, stakeholders and communities will work together to improve the water environment and fulfil the requirements of the WFD. The RBMP is updated every six-years as part of the river basin planning cycle; the second cycle RBMP[5] set out what measures would be undertaken to protect and improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters).

[5] Department of Housing, Local Government and Heritage (DHLGH). 2018. River Basin Management Plan 2018 - 2021. Accessed: March 2025. Available from: https://www.gov.ie/en/publication/429a79-river-basin-management-plan-2018-2021/

The third cycle River Basin Management plan - Water Action Plan 2024 (RBMP for Ireland)[6] sets out the measures that are necessary to protect and restore water quality in Ireland. The overall aim of the plan is to ensure that the natural waters are sustainably managed and that freshwater resources are protected so as to maintain and improve Ireland's water environment. Protecting and restoring water quality in Ireland will most of all need measures to address the loss of agricultural nutrients to water, continue to improve wastewater treatment and to re-establish natural free-flowing conditions in more rivers. Ireland's wastewater services face challenges on a number of fronts including a continued need for investment in infrastructure and an ever-increasing demand for water and wastewater services due to urbanisation, population and economic growth all set against a backdrop of widespread, rapid, and intensifying climate change.

Urban Wastewater is one of 15 main environmental measures set out in the Water Action Plan 2024 that address the significant environmental pressures on water. The measure includes those applied at a general scale and specific measures applied to certain catchments or sub-catchments (or at water body scale) as is necessary to meet the specific environmental objectives.

The Water Action Plan notes that the objective of the Urban Wastewater Treatment Directive (UWWTD) (including the revised UWWTD) is to minimise the impact of urban wastewater discharges on receiving waters. This approach contributes to the objectives of the Water Framework Directive, however in some cases additional emission limit values may be required to reach these objectives over and above UWWTD compliance. Uisce Éireann's investment programme for wastewater collection and treatment will need to support compliance with the Urban Wastewater Treatment Directive and the Water Framework Directive and facilitate the delivery of their objectives within the required timeframe. Investment is needed to upgrade infrastructure, both treatment plants and collection networks:

- Prioritising investment to deliver Protected Area Objectives and address the EPA Priority Areas List of urban areas where treatment must be improved to resolve national environmental priorities. The Priority Area List has been reduced from 148 areas in 2017 to 89 areas in 2022;
- Ensuring continued compliance with the UWWTD as agglomeration populations grow; and
- Ireland's National Recovery and Resilience Plan[7] includes the River Basin Management Plan – Enhanced Ambition Programme to advance priority wastewater treatment plant projects whose discharges have been identified as being significant pressures on water bodies and impacting on WFD objectives. Uisce Éireann identified at least 10 WasteWater Treatment plant upgrades works for inclusion in this programme by Q3 2022. The completion of the upgrades to the selected small wastewater treatment plants are to be completed by Uisce Éireann by Q3 2025. This project is funded by the European Union under the National Recovery and Resilience Plan.

The EPA have noted 197 water bodies where urban wastewater has been identified as a significant pressure. Uisce Éireann have complied a list which specifies the dates for actions on these pressures. There are eight waterbodies within the study area identified in this list (

Table 4.1). These are identified as the most significant pressure but not the sole pressure on the waterbody.

[6] Department of Housing, Local Government and Heritage (DHLGH). 2024. Water Action Plan 2024 (A River Basin Management Plan for Ireland). Accessed: March 2025. Available from: https://www.gov.ie/en/policy-information/8da54-river-basin-management-plan-2022-2027/ and Water-Action-Plan-2024_ENG_v5.pdf

[7] Department of the Taoiseach. 2021. The National Recovery and Resilience Plan. Accessed: May 2025. Available from: The National Recovery and Resilience Plan and Ireland's recovery and resilience plan - European Commission

Table 4.1 Waterbodies within the study area where urban wastewater has been identified as a significant pressure.

Waterbody Name	Pressure Sub-category	Agglomeration Name	Project of study title associated with the Pressure	Status of Pressure	Estimated Timeline
SHOURNAGH_030	Agglomeration PE > 10,000	Blarney	Options report/ Feasibility study	to be assessed	2024-2027
Cork Harbour	Agglomeration PE > 10,000	Cobh	Cobh	works complete	complete
Lough Mahon	Agglomeration PE > 10,000	Cork City	Cork City	under assessment	2024-2027
Lough Mahon	Combined Sewer Overflows	Cork City	Cork City DAP	under assessment	2024-2027
Lee (Cork) Estuary Lower	Combined Sewer Overflows	Cork City	Cork City DAP	under assessment	2024-2027
Lee (Cork) Estuary Upper	Combined Sewer Overflows	Cork City	Cork City DAP	under assessment	2024-2027
BLARNEY_010	Agglomeration PE of 1,001 to 2,000	Killeens	Killeens WWTP Upgrade	project progressing	2024-2027
Owenacurra Estuary	Combined Sewer Overflows	Midleton	Midleton Wastewater Network	project progressing	post 2029

Wastewater Treatment Plants (WwTPs) identified in the Water Action Plan 2024 (RBMP for Ireland) as causing water quality impacts in the rivers they discharge, are included in Uisce Éireann River Basin Management Plan Enhanced Ambition Programme funded by the European Union under Ireland's National Recovery and Resilience Plan but none of these discharges were within the CWS study area.

The CWS and the SEA need to take account of the objectives and targets of the River Basin Management Plans for the environment and the specific actions identified for Uisce Éireann.

Urban Wastewater Treatment Directive

The Urban Wastewater Directive (UWWTD) consolidated in 2014 (Council Directive 91/271/EEC of 21 May 1991) is a European Union (EU) directive regarding urban wastewater collection, wastewater treatment and its discharge. It sets standards for both treatment and disposal of sewage for communities of more than 2,000 person equivalents as well as monitoring requirements for wastewater discharges from urban areas.

Wastewater discharges are regulated by the EPA under the European Union (Waste Water Discharge) Regulations 2007 to 2020. The EPA can also issue notices to review Waste water Discharge Authorisations. This has been the relevant legislation setting standards for wastewater services over the last 18 years.

A recast UWWTD was adopted by the EU and entered into force on 1 January 2025. The directive is required to be transposed into national legislation by 31 July 2027 and will be the relevant legislation for wastewater services planning for the CWS. The main changes between the Urban Wastewater Treatment Directive (UWWTD) and its recast version (often referred to as the UWWTD recast or UWWTD 91/271/EEC recast) primarily involve updates and enhancements aimed at improving water quality and environmental protection standards across the EU. The revision of this directive is one of the key deliverables under the EU's zero pollution action plan and aims to update the current directive by extending its scope and aligning it with the European Green Deal's objectives.

The amendments to this legislation influence the recommendations of the draft CWS and is considered fundamental to the future regulatory framework once it is transposed into Irish legislation.

Some key differences and updates introduced in the recast UWWTD include:

Scope and Definitions: The recast clarifies and updates definitions related to wastewater treatment and discharge, ensuring consistency and alignment with current environmental standards.

Nutrient Removal Requirements: The recast strengthens requirements for nutrient removal, particularly for nitrogen and phosphorus, to reduce eutrophication in receiving waters. This includes stricter standards for sensitive areas such as coastal waters and freshwater bodies.

Implementation Deadlines: The recast sets revised deadlines for member states to comply with the directive's requirements, reflecting technological advancements and the need for accelerated environmental improvements.

- All agglomerations of 1,000PE or more to require an urban wastewater collecting system by 2035;
- Tertiary treatment to be required for treatment of urban wastewater for all agglomerations of 150,000 PE or more by 2039; and by 2045 for those agglomerations greater than 10,000 PE.
- Quaternary treatment for removal of a broad spectrum of micropollutants to be mandatory for all WwTPs of over 150,000 PE by 2045 (and by risk assessment over 10,000PE);

Monitoring and Reporting: Enhanced provisions for monitoring and reporting on the performance of wastewater treatment plants and the quality of discharged water are included in the recast. This ensures transparency and accountability in achieving environmental objectives.

- Increased Monitoring Requirements (frequency of sampling, sludge destinations, SWO monitoring etc.).
- The monitoring of various public health parameters (such as known viruses and emerging pathogens), chemical pollutants, including so-called "forever chemicals" (per- and polyfluoroalkyl substances or PFAS), microplastics and antimicrobial resistance will be strictly monitored.
- Introducing health parameters to monitor pandemics.

Innovation and Best Available Techniques: The recast promotes the use of innovative technologies and best available techniques in wastewater treatment processes to improve efficiency and reduce environmental impact. Objectives for the reduction of pollution from storm water overflows, including an indicative non-binding objective that storm water overflow represents a percentage that cannot be more than 2% of the annual collected urban wastewater load calculated in dry weather conditions. This indicative non-binding objective shall be met by 31 December 2039 for all agglomerations of 100,000 PE and above and 31 December 2045 for agglomerations of 10,000 PE and above.

Integration with Other Environmental Legislation: The recast ensures better integration with other EU environmental legislation, such as the WFD, to achieve broader environmental objectives cohesively.

- Introducing integrated planning obligations to better handle heavy rain plans covering agglomerations of over 100,000 PE to be required by 2030/2035 and for agglomerations between 10,000 PE and 100,000 PE by 2035/2040.
- The law introduces extended producer responsibility for medicinal products for human use and cosmetic products, to cover the costs of quaternary treatment (to remove micro-pollutants from urban wastewater). At least 80% of the costs will be covered by producers, complemented by national financing.

Public Participation and Information: There is an emphasis on public participation and providing accessible information about wastewater treatment practices and their environmental impacts under the recast.

Energy Audits: Energy audits to be completed on WwTPs and collecting systems every 4 years (>100,000 PE by Dec 2025, 10,000PE – 100,000PE by 2030);

- Utilise biogas and reduce methane emissions;
- Total annual energy from renewables, at national level from WwTPs >10,000 PE load, to be equivalent at least to
    - 50% by end 2030;
    - 75% by end 2035;
    - 100% by end 2040.
- Alternative proposals suggest for inclusion of an allowance for up to 30% of energy to be purchased from external sources.

Member States will be required to adopt national legislation transposing the requirements of the UWWTD within 30 months from the entry into force of the Directive (i.e.by the first quarter of 2027).

Wastewater Discharge (Authorisation) Regulations 2007 (as amended 2024) and European Union (Waste Water Discharge) Regulations 2020

The Wastewater Discharge (Authorisation) Regulations, 2007 were introduced to control and regulate discharges from Wastewater Treatment Works (and were amended in 2024).

All discharges to the aquatic environment from sewerage systems owned, managed and operated by Uisce Éireann require a wastewater discharge licence or certificate of authorisation from the EPA. Uisce Éireann is required to apply to the EPA for a licence or certificate of authorisation.

The authorisation process provides for the EPA to place stringent conditions on the operation of such discharges to ensure that potential effects on the receiving water bodies are strictly limited and controlled. Wastewater discharges are regulated by the EPA under the EU (Wastewater Discharge) Regulations 2020. The EPA can also issue notices to review Wastewater Discharge Authorisation.

In overall terms, the aim is to achieve good surface water and ground water status in addition to complying with standards and objectives established for associated protected areas in accordance with relevant legislation including the WFD.

European Communities Environmental Objectives (Surface Water) Regulations 2009

These Regulations establish legally binding quality objectives for all surface waters and environmental quality standards for pollutants, with the purpose of implementing protection measures. They allow the EPA to set up inventories of priority substances and classify surface water bodies.

The Regulations also require the examination and review of current discharge authorisations to ensure they comply with water quality objectives and standards relating to emission limits. It emphasizes that local authorities may work collaboratively with UÉ, other local authorities and the EPA to make pollution reduction plans concerning priority substances and phase out emissions and discharges of priority hazardous substances.

Bathing Water Regulations

The Bathing Water Directive (2006/7/EC) was transposed into Irish law in 2008. It aims to enhance the protection of bather's health and introduced stricter standards for water quality and a new method of assessment. It has established a more proactive approach to the assessment of possible pollution risks, and to the management of bathing waters. It also places significant priority on promoting increased public involvement, and for improved transfer of information on bathing water quality to the general public.

The Directive requires the monitoring and assessment of bathing waters. It ensures timely information is given to the public during the bathing season and requires authorities to disseminate information on bathing water quality actively and promptly. In particular, notices banning or advising against bathing should be rapidly and easily identifiable.

Floods Directive

The EU Floods Directive (2007/60/EC) required member states to develop Flood Risk Management Plans for areas of existing and future potentially significant flood risk. The Floods Directive was transposed into Irish law by the EU (Assessment and Management of Flood Risks) Regulations 2010 and sets out the responsibilities of Office of Public Works (OPW). The OPW has been implementing the Directive mainly through the Catchment-based Flood Risk Assessment and Management (CFRAM) Programme, identifying areas where risks associated with flooding might be significant (Areas of Further Assessment, or AFAs) and developing measures to address these risks. Floods and weather patterns are closely connected to challenges for urban drainage and contribute to issues related to storm water discharges and vulnerability to flooding is also a risk for treatment and supply infrastructure including impacts on associated services such as electricity supply and transport access.

Marine Planning

As part of implementing the Marine Spatial Planning Directive, Ireland's National Marine Planning Framework (2021 and updated 2024)[8] has been produced to provide guidance for activities and developments affecting the marine environment up to 2040. The Maritime Area Planning Act was enacted in 2021 and the Maritime Area Regulatory Authority (MARA) was established in July 2023 - together these introduce a new legislative regime around consent for development and activities in the marine area. The NMPF provides policies for sustainable planning and management of marine resources, balancing ecological, economic and social objectives in relation to aspects such as the environment, biodiversity, commercial fisheries and renewable energy. As part of this, the NMPF includes specific objectives and planning policies related to water quality and to wastewater treatment and disposal and these have been taken into account in the development of the CWS and for the SEA.

4.2.2 Climate Change Related Plans and Policies

Climate Action and Low Carbon Development (Amendment) Act 2021

In July 2021 the Climate Action and Low Carbon Development (Amendment) Act 2021 was signed into law. This Act establishes the following national climate objective:

"The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy."

To achieve that objective the Act sets out a number of actions. These include:

- The preparation of an annual update to the Climate Action Plan 2019 (currently Climate Action Plan 2025 is the latest annual Plan);

[8] Department of Housing, Local Government and Heritage (DHLGH). 2021. Project Ireland 2040: National Marine Planning Framework. Accessed: March 2025. Available from: https://www.gov.ie/en/publication/60e57-national-marine-planning-framework/

- The preparation, not less frequently than once every 5 years, of a national long term climate action strategy (referred to as a 'national long term climate action strategy);
- The establishment of carbon budgets, aligned with the achievement of the national climate objective, for consecutive 5-year periods;
- The preparation of "*sectoral emissions ceilings*" which establish the maximum amount of greenhouse gas emissions that are permitted in different sectors of the economy during the 5-year period of a carbon budget;
- The preparation of "*local authority climate action plans*" covering periods of five years, which are required to specify the mitigation measures and the adaption measures to be adopted by the relevant local authority in relation to climate matters; and
- An obligation that public bodies must take account of Climate Action Plans in the performance of their functions.

The Act provides that the first two 5-year carbon budgets should equate to a total reduction of 51% over the period to 2030, relative to a baseline of 2018. While that overall target has not yet been disaggregated into sectorial targets, it is understood that the transport sector will be required to achieve this 51% reduction in full.

The Climate Action Plan and Low Carbon Development Act will strongly influence the investments set out in the CWS and guide development of its aim to identify sustainable wastewater management and treatment strategies and to develop a prioritised solutions list for medium and long term. The draft CWS has explored ways to minimise the carbon impact of wastewater treatment through prioritisation of sustainable solutions for effective wastewater management.

The Climate Action Plan 2025 (CAP25)[9]) is the third annual update to Ireland's Climate Action Plan 2019. The Plan was approved by Government in April 2025 and builds on CAP24 which was updated to include an additional Sustainable Development Goals (SDG) chapter which provides an assessment of each chapter of the Plan for SDG impact at SDG target level.

CAP25 set out a roadmap of actions which will ultimately lead to meeting national climate objective of pursuing and achieving, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. CAP25 refines and updates CAP24's carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government.

Progress Reports on the Climate Action Plans are published each quarter. For CAP25, the action progress report highlights 'high impact' measures, Key Performance Indicators, state of play on emissions targets, recent emissions trends, action case studies and foresight on key actions due later in 2025.

The CWS will set the context for subsequent implementation plans and projects that will detail the programmes of works to be completed in specific areas relevant to climate change adaptation and mitigation and wastewater compliance in accordance with the CAP25.

National Adaptation Framework and Sectoral Adaptation Planning

Building on the work completed under the National Climate Change Adaptation Framework, the Department of Communications, Climate Action and Environment published Ireland's first statutory National Adaptation Framework (NAF) in January 2018[10] and has been subject to review and updated with Ireland's second statutory National Adaptation Framework published in June 2024. The NAF sets out the national approach to

[9] Department of the Environment, Climate and Communications (DECC). 2025. Climate Action Plan 2025. Accessed: May 2025. Available from: https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/climate-action-plan-2025/

[10]Department of the Environment, Climate and Communications (DECC). 2024. National Adaptation Framework 2024. Accessed: March 2025. Available from: https://www.gov.ie/en/publication/fbe331-national-adaptation-framework/

adaptation in Ireland in order to reduce the negative impacts of climate change. The framework requires each government department to develop a sectoral adaptation plan for their area of responsibility.

As response to the requirements of 2018 NAF, the DHLGH produced the Adaptation Plan for Water Quality and Water Services Infrastructure[11].

The Climate Action and Low Carbon Development (Amendment) Act 2021 requires that all local authorities to prepare climate action plans, to be updated at least every 5 years. These plans were published in April 2024. The NAF review process took place in 2022. The Review also takes account of key developments at International and EU level, notably the publication of the IPCC Working Group I and II reports, the agreement and publication of the new 2021 EU Adaptation Strategy, and feedback on current Adaptation policy in Ireland. A Report on the NAF Review was approved in October 2022, and recommended the development of a new NAF and that provision for the making of joint Sectoral Adaptation Plans would be best accommodated within a new framework. *Revision of sectoral adaptation plans* is also highlighted as a requirement. The 2024 NAF takes account of the changes and challenges and in particular the need for national climate change adaptation indicators and a national climate adaptation risk assessment.

The draft CWS is relevant to the implementation of measures identified in the Adaptation Plan for Water Quality and Water Services Infrastructure and addressing the recommendations of the new 2024 NAF.

Local Climate Adaptation Strategies

Under the National Adaptation Framework (NAF), which was published in response to the provisions of the Climate Action and Low Carbon Development Act 2015, all Local Authorities were tasked with producing a Climate Adaptation Strategy for their functional areas. In 2019 Cork County Council developed the Climate Adaptation Strategy for Cork County[12] and Cork City Council developed the Climate Adaptation Strategy for Cork City[13]. These strategies draw on the data issued by both national and international forums in addition to those from regional and local sources. They establish an extreme weather event baseline and predicts the challenges and risks that climate change will pose for the county in the future.

Climate Change Adaptation Strategies take on the role as the primary instrument at local level to ensure a proper comprehension of the key risks and vulnerabilities of climate change; bring forward the implementation of climate resilient actions in a planned and proactive manner and, ensure that climate adaptation considerations are mainstreamed into all council operations and functions.

4.2.3 Biodiversity Plans and Policies

4th National Biodiversity Action Plan 2023-2030

The Plan[14] sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first, second and third National Biodiversity Action Plans. It has been developed in line with the EU and International Biodiversity strategies and policies.

The 4th NBAP aims to take account of the Global Biodiversity Framework. This recognises that despite three decades of co-ordinated global action for conservation, the loss of biodiversity continues, posing significant threats to human well-being. This Framework is intended to guide actions worldwide for the decade to 2030 to preserve and protect nature and its essential services to people. It includes a vision for biodiversity

[11] Department for Housing, Local Government and Heritage (DLGH). 2019. Water Quality and Water Services Infrastructure – Climate Change Sectoral Adaptation Plan. Accessed: March 2025. Available from: https://www.gov.ie/en/publication/f5710-water-quality-and-water-services-infrastructure-climate-change-sectoral-adaptation-plan/

[12] Cork County Council. 2019. Climate Adaptation Strategy 2019-2024. Accessed: March 2025. Available from: https://www.corkcoco.ie/sites/default/files/2021-11/cork-county-council-climate-adaptation-strategy-2019-2024-pdf.pdf

[13] Cork City Council. 2019. Climate Change Adaptation Strategy 2019-2024. Accessed: March 2025. Available from: https://www.corkcity.ie/en/media-folder/environment/final-cork-city-council-climate-change-adaptation-strategy-30-sept-2019-.pdf

[14] Department of Culture, Heritage and the Gaeltacht. 2024. Ireland's 4th National Biodiversity Action Plan 2023–2030. Accessed: March 2025. Available from: https://www.gov.ie/en/publication/93973-irelands-4th-national-biodiversity-action-plan-20232030/

governance further into the future, aiming for a global effort towards living in harmony with nature by the year 2050. The 4th NBAP set out a Vision for Biodiversity in 2050 where '*Biodiversity in Ireland is valued, conserved, restored and sustainably used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people*'.

194 targeted actions are contained in the Plan, underpinned by five strategic objectives. The objectives contain series of outcomes and lay out a clear framework for Ireland's national approach to biodiversity, ensuring that efforts and achievements of the past are built upon, while looking ahead to what can be achieved over the next five years and beyond.

They include:

- Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity;
- Meet Urgent Conservation and Restoration Needs;
- Secure Nature's Contribution to People;
- Enhance the Evidence Base for Action on Biodiversity;
- Strengthen Ireland's Contribution to International Biodiversity Initiatives.

The draft CWS need to take account of the objectives and actions under 4th National Biodiversity Action Plan particularly those aimed at improving biodiversity and water quality including meeting urgent protection and restoration needs (Objective 2) and linkage to meeting the third cycle RBMP objectives.

EU's Nature Restoration Law

The European Commission has adopted an EU Nature Restoration Law in August 2024 (Regulation (EU) 2024/1991) . This is the first continent-wide, comprehensive law of its kind and is a key element of the EU Biodiversity Strategy and a step towards implementing the EU Green Deal. The law aims to restore ecosystems, habitats and species across the EU's land and sea areas in order to:

- Enable the long-term and sustained recovery of biodiverse and resilient nature;
- Contribute to achieving the EU's climate mitigation and climate adaptation objectives; and
- Meet international commitments.

The regulation combines an overarching restoration objective for the long-term recovery of nature in the EU's land and sea areas with binding restoration targets for specific habitats and species. These measures should cover at least 20% of the EU's land and sea areas by 2030, and ultimately all ecosystems in need of restoration by 2050.

The regulation contains the following specific targets:

- targets based on existing legislation (for wetlands, forests, grasslands, river and lakes, heath & scrub, rocky habitats and dunes) - improving and re-establishing biodiverse habitats on a large scale, and bringing back species populations by improving and enlarging their habitats
- pollinating insects – reversing the decline of pollinator populations by 2030, and achieving an increasing trend for pollinator populations, with a methodology for regular monitoring of pollinators
- forest ecosystems – achieving an increasing trend for standing and lying deadwood, uneven aged forests, forest connectivity, abundance of common forest birds and stock of organic carbon
- urban ecosystems – no net loss of green urban space and tree cover by 2030, and a steady increase in their total area from 2030
- agricultural ecosystems – increasing grassland butterflies and farmland birds, the stock of organic carbon in cropland mineral soils, and the share of agricultural land with high-diversity landscape features; restoring drained peatlands under agricultural use

- marine ecosystems – restoring marine habitats such as seagrass beds or sediment bottoms that deliver significant benefits, including for climate change mitigation, and restoring the habitats of iconic marine species such as dolphins and porpoises, sharks and seabirds.
- river connectivity – identifying and removing barriers that prevent the connectivity of surface waters, so that at least 25 000 km of rivers are restored to a free-flowing state by 2030

The draft CWS and SEA take account of the need to address the requirements of the Nature Restoration Law as these are brought into national policy and regulations and potentially including through future updates to Uisce Éireann's own Biodiversity Action Plan.

Local Heritage and Biodiversity Plan

The Cork City Heritage and Biodiversity Plan 2021-2026[67] contains 73 actions which aim to add to the understanding of heritage and biodiversity in Cork City as well as helping to enhance and restore this precious resource. It will also contribute to Cork City's economy, tourism sector, recreation facilities and the health and wellbeing of our communities.

The aim of Heritage and Biodiversity Plan is to protect, enhance, promote and restore the heritage and biodiversity of Cork City and to place the care of our heritage at the heart of the community. The Plan sets out four themes on Heritage and Biodiversity which are:

- Promote best practice and encourage heritage and biodiversity conservation and management;
- To be at the forefront of research and education, and support training in heritage and biodiversity related fields;
- To raise awareness, appreciation, engagement with and enjoyment of heritage and biodiversity and communicate heritage message to a citizens and visitors alike; and
- To increase the level of social, economic and tourism activity for heritage and biodiversity in the city.

4.2.4 Circular Economy Plans and Policies

EU Soil Strategy for 2030

The EU soil strategy for 2030[88] sets out a framework and concrete measures to protect and restore soils, and ensure that they are used sustainably. It sets a vision and objectives to achieve healthy soils by 2050, with specific actions by 2030. The strategy also proposed a new Soil Health Law to ensure a level playing field and a high level of environmental and health protection.

The new EU soil strategy for 2030 is a key deliverable of the EU biodiversity strategy for 2030. It will contribute to the objectives of the European Green Deal. Healthy soils are essential for achieving climate neutrality, a clean and circular economy and halting desertification and land degradation. They are also essential to reverse biodiversity loss provide healthy food and safeguard human health.

The EU soil strategy aims to ensure that, by 2050:

- All EU soil ecosystems are healthy and more resilient and can therefore continue to provide their crucial services;
- There is no net land take and soil pollution is reduced to levels that are no longer harmful to people's health or ecosystems; and
- Protecting soils, managing them sustainably and restoring degraded soils is a common standard.

A proposal for an EC Directive on soil monitoring was published July 2023. This will set out a framework for soil monitoring and aim to support sustainable soil management and required contaminated land to be identified and addressed.

The draft CWS considers how proposed actions can support this strategy especially through sludge waste disposal and circular economy approaches.

Circular Economy and Miscellaneous Provisions Act 2022

The Circular Economy and Miscellaneous Provisions Act 2022[15] builds on Ireland's commitment to achieving a circular economy, as set out in the National Waste Management Plan Waste for a Circular Economy 2024-2030[16] and the 2021 Whole-of-Government Circular Economy Strategy[17]. The Act demonstrates commitment to a more sustainable pattern of production and consumption, that retains the value of resources in the economy for as long as possible which will also significantly reduce greenhouse gas emissions.

In a circular economy, waste and resource use are minimised. The use and value of products and materials is maintained for as long as possible. When a product has reached the end of its life its parts are used again and again – to create further useful products, instead of being discarded which is an all too familiar pattern now. The Act includes:

- Incentives for the use of reusable and recyclable alternatives to a range of wasteful single-use disposable packaging and other items;
- Re-designates the existing Environment Fund as a Circular Economy Fund, which will remain ring-fenced to provide support for environmental and circular economy projects;
- Introduces a mandatory segregation and incentivised charging regime for commercial waste, similar to the household market. This will increase waste separation and support increased re-cycling rates;
- Places the Circular Economy Strategy and National Food Loss Prevention Roadmap on a statutory footing, establishing a legal requirement for governments to develop and periodically update these 2 policies;
- Streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market; and
- Consolidates the government's policy of keeping fossil fuels in the ground – by introducing prohibitions on exploration for and extraction of coal, lignite and oil shale.
- For the development of the draft CWS, the Circular Economy and Miscellaneous Provisions Act 2022 Act is particularly relevant with respect to addressing wastewater treatment wastes.

4.2.5 Land Use and Economic Planning Plans and Policies

The Planning and Development Act 2024

The Planning and Development Act was adopted in 2024. The Act represents a major overhaul of the planning system in Ireland which aims to strengthen the legal status of ministerial guidelines and policy directives. These will require Government approval and alignment with the policies and measure will be mandatory. Other plans will be required to be materially consistent with them. There will be changes to Local Development Plans and to the structure of the Local Area Plan system. Statutory timelines for all consent processes will be introduced and changes proposed to Judicial Reviews.

The Act provides the legislative framework for spatial planning and sustainable development which will be relevant for implementing development proposals identified through the CWS.

[15] Government of Ireland. 2022. Circular Economy and Miscellaneous Provisions Act 2022. Accessed: March 2025. Available from: https://www.irishstatutebook.ie/eli/2022/act/26/enacted/en/html

[16] Department of the Environment, Climate and Communications. 2024. National Waste Management Plan for a Circular Economy - Ireland's National Waste Policy 2024-2030. Accessed: March 2025. Available from: National Waste Management Plan for a Circular Economy 2024-2030 - My Waste

[17] Department of the Environment, Climate and Communications. 2021. Whole of Government Circular Economy Strategy 2022-2023. Accessed: March 2025. Available from: www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more-using-less/; https://assets.gov.ie/207622/bd90130d-494e-4d32-8757-46d36c77b912.pdf

National Development Plan Review 2025

As part of Project Ireland 2040 the NDP Review 2025[18] updates the NDP 2021-2030 Government's over-arching investment strategy and budget for the period 2026 to 2035. It is an ambitious plan that balances the significant demand for public investment across all sectors and regions of Ireland with a major focus on improving the delivery of infrastructure projects to ensure speed of delivery and value for money.

This NDP is identified as being 'the largest and greenest ever delivered in Ireland', with a particular focus on supporting the largest public housing programme in the history of the state. While many of the investments in this NDP are already well known and have been progressing through planning for some time, there are a range of investments which are new or enhanced in this NDP including funding to support housing growth to Uisce Éireann. The CWS will need to take account of population and economic growth including proposed housing development and the related requirements for wastewater services.

National Planning Framework – Project Ireland 2040

The National Planning Framework (NPF)[1] is a national document published on 16th February 2018. Ireland's second statutory National Adaptation Framework (NAF) First Revision was published in April 2025[19]. This latest NAF replaces the first iteration of the framework published in 2018, which was reviewed in 2022 in line with the five year requirement of the 2015 Climate and Low Carbon Development Act (the Climate Act).

The National Planning Framework 2040 is a strategic development framework setting out the long-term context for Ireland's physical development and associated progress in economic, social, and environmental terms. The National Planning Framework is being followed and underpinned by supporting policies and actions at sectoral, regional and local level. The National Planning Framework is accompanied by the ten-year National Development Plan, together forming one plan to guide strategic development and infrastructure investment at a national level.

In the period to 2040, the National Planning Framework recognises Dublin as Ireland's key international and global city of scale and principal economic driver, accounting for 25% of growth. A further 25% of growth is estimated to occur across the other four cities combined (Cork, Limerick, Galway, and Waterford), enabling all four to become cities of greater scale by growing their population and jobs by 50-60%.

Under the framework three regional assemblies have been identified, Eastern and Midland, Northern and Western, and Southern. The study area falls within the Southern region.

The 2025 first revision to the NPF has been made in the context of a number of changes in policy and legislation since 2018 when the NPF was originally published and will include taking account of the Climate Action Plan 2024/2025, the National Marine Planning Framework from 2021 and the changes brought about by the adoption of the Planning and Development Bill 2023.

The NPF and regional and local plans are key for the CWS in terms of the population and economic growth and housing development that needs to be supported by wastewater services and also the potential to inform and influence these plans to support more sustainable development.

Regional Spatial and Economic Strategy (RSES) for the Southern Region of Ireland

Under the Local Government Reform Act 2014, the Southern Regional Assembly assumed a number of new functions - chief among these is the preparation and implementation of a Regional Spatial and Economic Strategy (RSES) for the Southern Region of Ireland[2].

[18] Department of Public Expenditure, Infrastructure, Public Service Reform and Digitisation. National Development Plan Review 2025. Accessed: July 2025. Available from: https://www.gov.ie/en/department-of-public-expenditure-infrastructure-public-service-reform-and-digitalisation/publications/national-development-plan-review-2025/

[19] Government of Ireland: Project Ireland 2049 National Planning Framework First Revision, April 2025. Accessed June 2025. Available from https://cdn.npf.ie/wp-content/uploads/National-Planning-Framework-First-Revision-April-2025-1.pdf

The RSES[2] sets out the strategic regional development framework for the Region, with a primary aim to implement Project Ireland 2040 - the National Planning Framework, at the regional tier of Government and to support the achievement of balanced regional development.

The Planning and Development Act 2000 (as amended) requires that all City and County Development Plans and variations are consistent with the RSES and relevant national policy, with draft development plans or proposed variations to development plans referred by the relevant local authority to the Regional Assembly. The Regional Assembly considers the consistency of the draft with the RSES and can make formal recommendations to the local authority on what amendments, in the opinion of the Regional Assembly, are required to ensure consistency of the proposed variation to the development plan and its core strategy with the RSES.

Local Development Plans

The Cork County Development Plan 2022-2028[110] has been prepared in accordance with the steps set out in the Planning and Development Acts. The plan a six-year development plan for the County that attempts to set out, as concisely as possible Cork County Council's current thinking on planning policy looking towards the horizon year of 2028. The plan also sets out the overall planning and sustainable development strategy for the county which must be consistent with the NPF, Southern RSES, and Cork Metropolitan Area Strategic Plan (MASP) 2020.

The Cork City Development Plan 2022-2028[109] has been incorporated in accordance with Section 31(17) of the Planning and Development Act 2000 (as amended) and sets out how the city will grow and develop over the next six years, while complementing a longer 2040 vision. This statutory plan also encompasses the towns of Ballincollig, Blarney, Tower and Glanmire, and their wider hinterland areas. The Plan sets out how the city can best enable this growth and investment over the next six years, while continuing to be an innovative, vibrant, healthy and resilient city.

4.3 Relevant Uisce Éireann Plans

The hierarchy of plans related to the CWS is illustrated in Figure 4-1. These include:

- Overarching WSSP2050 setting our objectives and strategic aims across Uisce Éireann's water and wastewater services
- Topic specific plans such as, on climate change or biodiversity, which inform all Uisce Éireann's plans and programme; and
- Implementation plans for wastewater related services-identifying targets and investment needs.

Key Uisce Éireann plans and programmes most relevant to the CWS are discussed below.

4.3.1 WSSP2050 – Overarching Tier 1 plan

The WSSP 2050 is Uisce Éireann's long-term strategic plan which is required to be prepared under the Water Services Act. It sets out objectives and how Uisce Éireann aim to achieve them in the context of the significant challenges likely to be faced over the next 25 years. The plan outlines Uisce Éireann's strategic direction and the actions that will be implemented to ensure sustainable public water services for Ireland. As illustrated in Figure 4-2 below, WSSP2050 includes 4 objectives and 14 strategic aims. The plan also identifies 35 actions to implement these aims. The WSSP2050 was approved in 2025 and objectives of key relevance for the development of the CWS and the SEA are the commitment to support sustainable growth and to protect and restore the environment and to develop sustainable services for the future.

Figure 4-2 WSSP2050 Objectives and Strategic Aims

4.3.2 Topic Specific Plans

Sustainable Energy – Climate Change Mitigation and Adaptation

Improving energy efficiency is one of Uisce Éireann's key sustainability measures for improving their carbon footprint and reducing greenhouse gas emissions. Uisce Éireann aims to become a low carbon, energy efficient, sustainable water utility with targets to improve energy efficiency by 50% by 2030 (2009 baseline) and achieve an absolute reduction (51%) in GHG emissions from energy by 2030 (2016-18 baseline). The strategy includes business wide energy action plans that focus on Capital Energy Efficiency, Operational Energy Efficiency, Renewable Energy, Innovation and Transformation and Energy Management. Significant progress has been made in implementing the sustainable energy strategy with a 30% improvement in energy efficiency performance to date. Uisce Éireann is on track to meet the target of 50% energy efficiency improvement by 2030 and achieving an absolute reduction (51%) in GHG emissions energy by 2030, putting them in a strong position for net zero carbon by 2040.

Energy efficiency improvement is also a key mitigation measure of Uisce Éireann climate change policy to help ensure water and wastewater services are resilient to climate change, developing a low greenhouse gas emitting water and wastewater service. Uisce Éireann is implementing a business wide climate mitigation and adaptation strategy, aligned with the Water Sector Adaptation Plan under the National Adaptation Framework. The draft CWS has been developed considering the adaptation and mitigation actions to be undertaken to minimise the consequences of climate change on Uisce Éireann, their customers and the environment.

Biodiversity Action Plan

Uisce Éireann's Biodiversity Action Plan (BAP)[20] details specific objectives and actions to address the biodiversity emergency. These objectives and actions align with Uisce Éireann policy-level strategic objectives and implementation is in progress. The plan will be reviewed and updated every five years in line with the company's periodic review. The following key objectives have been identified:

[20] Uisce Éireann's. 2021. Irish Water's Biodiversity Action Plan. Accessed: March 2025. Available from: https://www.water.ie/projects/strategic-plans/biodiversity-action-plan

- Issue all Uisce Éireann sites with a clear set of measures that will enhance and protect biodiversity.
- Raise awareness and provide educational supports on biodiversity to Uisce Éireann staff and its partners.
- Ensure 'no net loss' of biodiversity when carrying out activities, or delivering plans or projects.
- Implement actions arising from the All-Ireland Pollinator Plan across all Uisce Éireann sites, to support and increase our pollinator population.
- Promote the use of nature-based solutions for water protection and wastewater treatment.
- Manage invasive alien species at Uisce Éireann's sites.
- Collaborate and work with key internal and external stakeholders, and the wider community, to protect and enhance biodiversity.

4.3.3 Implementation Plans

National Wastewater Sludge Management Plan (National Bioresource Strategy)

Uisce Éireann adopted the first National Wastewater Sludge Management Plan (NWSMP) in 2016 outlining our strategy for managing wastewater sludge over a 25-year period[21]. The NWSMP is one of Uisce Éireann 's Tier 2 Implementation Plans.

Uisce Éireann has looked at how wastewater sludge is currently managed throughout the country and estimates that the quantity of wastewater sludge generated is expected to increase by more than 80% by 2040 as new and upgraded plants to treat wastewater are completed. The management of this wastewater sludge poses economic, planning and environmental challenges. The NWSMP presents a national approach to wastewater sludge. This will ensure that, for the first time, treated wastewater sludge across the country is effectively managed, stored, transported and re-used or disposed of in a sustainable way, to the benefit of the public and the environment we all live in.

Uisce Éireann is currently reviewing and updating the National Wastewater Sludge Management Plan. The next revision of the Plan as the Bioresources Plan will provide a progress update on the objectives identified in the original Plan (2016). The next revision of the Plan will also include detail around sludge management activities and how these activities impact climate change, sustainability and circular economy initiatives.

[21] Uisce Éireann. 2016. National Wastewater Sludge Management Plan. Accessed: March 2025. Available from: https://www.water.ie/projects/strategic-plans/national-wastewater-sludg

5 Environmental Baseline

5.1 Introduction

This section of the SEA Environmental Report describes nformation on the existing baseline environment including:

- Description of the existing baseline environment – the baseline is an outline of the current situation or condition drawn from available information, which provides a benchmark against which environmental effects of proposals can be assessed.
- Future trends – the likely future trends and the basis for the potential evolution of the existing baseline environment in the absence of the CWS is set out.
- Key considerations for the development of CWS and undertaking SEA – this summarises the key points to be considered from the review of the existing baseline environment most relevant to the development of CWS, including challenges and opportunities, to help focus the environmental assessment and inform the SEA objectives.

5.2 Types of Actions and Activities influenced by the CWS

As background and to help focus the assessment, the broad types of activities that Uisce Éireann will be responsible for during the implementation of the CWS are considered to identify the types of impacts that could give rise to significant effects on the environment. These are summarised in Table 5.1 below.

Table 5.1 Types of CWS related activities and potential environmental impacts

CWS related activity	Potential types of environmental Impacts
Development of new wastewater services infrastructure including pipelines and wastewater treatment plants – construction, operation and decommissioning	• Land use change/loss - temporary and permanent. • Loss/change in habitat area. • Disturbance (short-term or long-term) to species. • Habitat fragmentation including barrier effects to species movement. • Species mortality (including prey species). • Hydrological changes to aquatic environments. • Transfer of invasive non-native species through construction and operational activities. • Construction disturbance effects from noise, air pollution, water pollution, visual amenity on nearby receptors and traffic disruption impacts. • Cultural heritage impacts on sites and risk to buried archaeological interest. • Landscape/ townscape and seascape impacts depending on structure and location. • Geological sites and soils loss or damage. • Source of carbon emissions, energy and material resource use for construction and waste generation. • Benefits from improved access to wastewater collection. • Improved operational energy efficiency and carbon emissions from rationalisation.

CWS related activity	Potential types of environmental Impacts
	• Odour issues from wastewater treatment but also potential for improvement with operational practices and upgraded treatment. • Potential vulnerability to effects of climate change on structures and operations – e.g. from increase in extreme events such as storms, floods, droughts and freeze/thaw events. • Supporting wastewater service demand and improving reliability and flexibility in the network.
Discharge of treated wastewater and stormwater and untreated discharges	• Surface and groundwater pollution from discharge of wastewaters from sewage treatment plants, and also stormwater and raw sewage discharges affecting WFD water quality objectives for freshwater, estuarine and coastal waters. • Impacts on the aquatic ecology of freshwater, estuarine and coastal waters with associated effects on ecosystem services such as through reduced biodiversity, recreation impacts (for example on designated Bathing Waters and angling), and fisheries impacts including on Shellfish Waters Protected Areas and associated users and livelihoods. • Landscape and visual amenity impacts related to effects of pollution such as algal blooms and untreated sewage. • Reduced resilience to climate change and other pollutant pressures.
Wastewater sludge disposal	• Wastewater treatment processes can influence the potential for disposal, recycling or resource recovery from sludges. • Potential for pollution from wastewater treatment sludge disposal – but also well established waste recovery through such as agricultural use.
Wastewater network	• Potential for network overload and flooding with pollution and community impacts. • Potential for increase in flood incidents due to climate change and more frequent extreme weather events.
Other types of activity	These can include a range of supporting actions, many of which can provide beneficial impacts for example: • Catchment management initiatives and Nature Based Solutions (NBS) typically requiring collaboration with other stakeholders for delivery but also potentially providing wider environmental benefits supporting the receiving environment. • Awareness raising /behaviour and upstream business/manufacturing changes to reduce pollutants entering system and environment • Innovation in treatment technology to address emerging issues • Property and operations management, investigations, monitoring, studies, and mitigation measures related to delivery and improving services and reducing impacts or uncertainty of outcomes.

5.3 SEA Topics

The SEA environmental baseline information is described under the following environmental topics and section headings:

- Water Environment;
- Population, Economy, Tourism and Recreation, and Human Health;
- Climate Change;
- Biodiversity;
- Material Assets;
- Landscape, Townscape and Seascape;
- Cultural Heritage – Archaeological and Architectural;
- Geology and Soils;
- Air Quality;
- Noise and Vibration; and
- Transboundary Environment.

5.4 SEA Study Area

The spatial areas for the SEA are as follows:

- Core study area: comprises the CMA and the Cork Harbour and Cork Outer Harbour WFD waterbodies;
- Zone of influence for European designated sites additionally including those located partially or fully outside of the Core study area which, by applying the "source-pathway-receptor" model, have been determined to have potential impact pathways connecting elements of the CWS to European sites in view of their conservation objectives (zone of influence as identified in Table 4.1 of the AA Screening Report)
- Zone of influence for WFD water bodies – this is based on the surface water hydrometric modelling area and used to identify the relevant WFD water bodies within and outside the Core study area for the assessment.

The core study area extent is as shown in Figure 2-1 in Section 2, together with the surrounding WFD catchment areas, the WFD surface waterbodies and the surface water hydrometric modelling area (see Figure 5-1). The European sites assessed as within the zone of influence for the AA screeening are identified in Table 5.14 in Section 5.11.

5.5 SEA Time Frame

The temporal scope for the SEA is the period between 2025 and 2080. The draft CWS considers this time period including longer term design horizon years from 2055 to 2080; Options proposed in this draft CWS will support the delivery of these longer term solutions. The long term horizon does create a challenge in establishing a robust environmental baseline this far into the future, however, the CWS will be revised and updated on a regular basis and the SEA assessment will be revised and updated alongside the future iterations of the CWS.

5.6 High Level Environmental Trends Across Ireland

The EPA's latest State of the Environment Report[22] provides:

- An assessment of trends, challenges and actions for air, climate change, noise, water, marine, nature, land use and soil;
- Detailed integrated assessments of key economic sectors: transport, energy, agriculture, industry and the circular economy and of the interactions between human health and the environment.; and
- An in-depth assessment of Ireland's performance in the area of environmental policy implementation and includes an Environmental Scorecard for Ireland across five key environmental themes: Climate, Air Quality, Nature, Water and Waste.

The following areas identified as challenges to address across Ireland within the State of the Environment Report (SOER) are environmental issues particularly pertinent to development of the CWS:

- Climate adaptation and water resilience: high greenhouse gas (GHG) emissions continue, and the scale and pace of GHG reductions must accelerate to meet 2024 Climate Action Plan targets.
- Water: deteriorating water quality trends over the last 20 years, particularly for coastal waters and rivers.
- Biodiversity: deteriorating protected habitat trends, with 85% of EU protected habitats having unfavourable status. Trends for EU protected species are mixed, however freshwater species are most at risk and some freshwater species are under threat.

Waste, soil health and the circular economy (including the EU Soil Strategy's aims to achieve good soil health by 2050): these aspects also support carbon, water quality and biodiversity, where further action is needed to meet long-term objectives and targets. Further detail regarding the baseline environment for each of these topic areas is provided in the baseline topic sections below.

These key challenges of relevance to the CWS also directly link to the following four UN Sustainable Development Goals (SDG):

- **SDG 6** Clean Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all;
- **SDG 13** Climate Action: Take urgent action to combat climate change and its impacts;
- **SDG 14** Life Below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development; and
- **SDG 15** Life On Land: Protect and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Significant population increase is anticipated over the coming decades, which is an important consideration for wastewater treatment, and therefore relevant for the water environment including compliance with the Water Framework Directive and SDGs 6 and 14.

[22] Environmental Protection Agency (EPA). 2024. Ireland's State of Environment Report 2024 Accessed: March 2025. Available from: https://www.epa.ie/our-services/monitoring--assessment/assessment/state-of-environment-report-/

Specific indicators for meeting the UN SDGs in Ireland are reported on Ireland's SDG data hub[23], and include a Central Statistics Office CSO Report on Indicators for Goal 6 Clean Water and Sanitation: Overview – SDG 6 Clean Water and Sanitation[24].

5.7 Sources

A wide range of publicly available sources of information are used as a basis for identifying the baseline environment including, web-based searches, published reports and Geographic Information Systems (GIS) mapped data. These sources, along with Uisce Éireann's own data, are referred to in the relevant topic sections and a reference list for the sources is provided at the end of the report. Key general sources for the review of the existing baseline environment for the SEA of CWS also include:

- Ireland's State of the Environment Report, EPA 2024
- The EPA https://gis.epa.ie/EPAMaps/, https://enviromap.ie/, and https://gis.epa.ie/EPAMaps/SEA;
- The Central Statistics Office (CSO) https://www.cso.ie/en/index.html;
- Geological Survey Ireland https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx;
- The National Parks and Wildlife Service (NPWS) https://www.npws.ie/; and
- The European Environment Agency (EEA) https://www.eea.europa.eu/.

5.8 Water Environment

5.8.1 Water Environment Baseline Conditions

There are three WFD catchments that intersect with the zone of influence based on hydrometric modelling area, and these are listed in Table 5.2 and shown in Figure 5-1 and Figure 5-2.

Table 5.2 WFD catchments intersecting with the zone of influence

WFD catchment name	Total area (km^2)	Area within hydrometric modelling area (km^2)	% of total area
Lee, Cork Harbour and Youghal Bay	2,180.86	789.44	36.20
Blackwater (Munster)	3,309.99	0.10	0.003
Bandon-Ilen	1,798.77	24.67	1.37

[23] Government of Ireland. 2023. Ireland's Sustainable Development Goals data hub. Accessed: March 2025. Available from: https://irelandsdg.geohive.ie

[24] Central Statistics Office (CSO). 2021. Ireland's UN SDGs 2019 - Report on Indicators for Goal 6 Clean Water and Sanitation. Accessed: March 2025. Available from: https://www.cso.ie/en/releasesandpublications/ep/p-sdg6/irelandsunsdgs2019-reportonindicatorsforgoal6cleanwaterandsanitation/

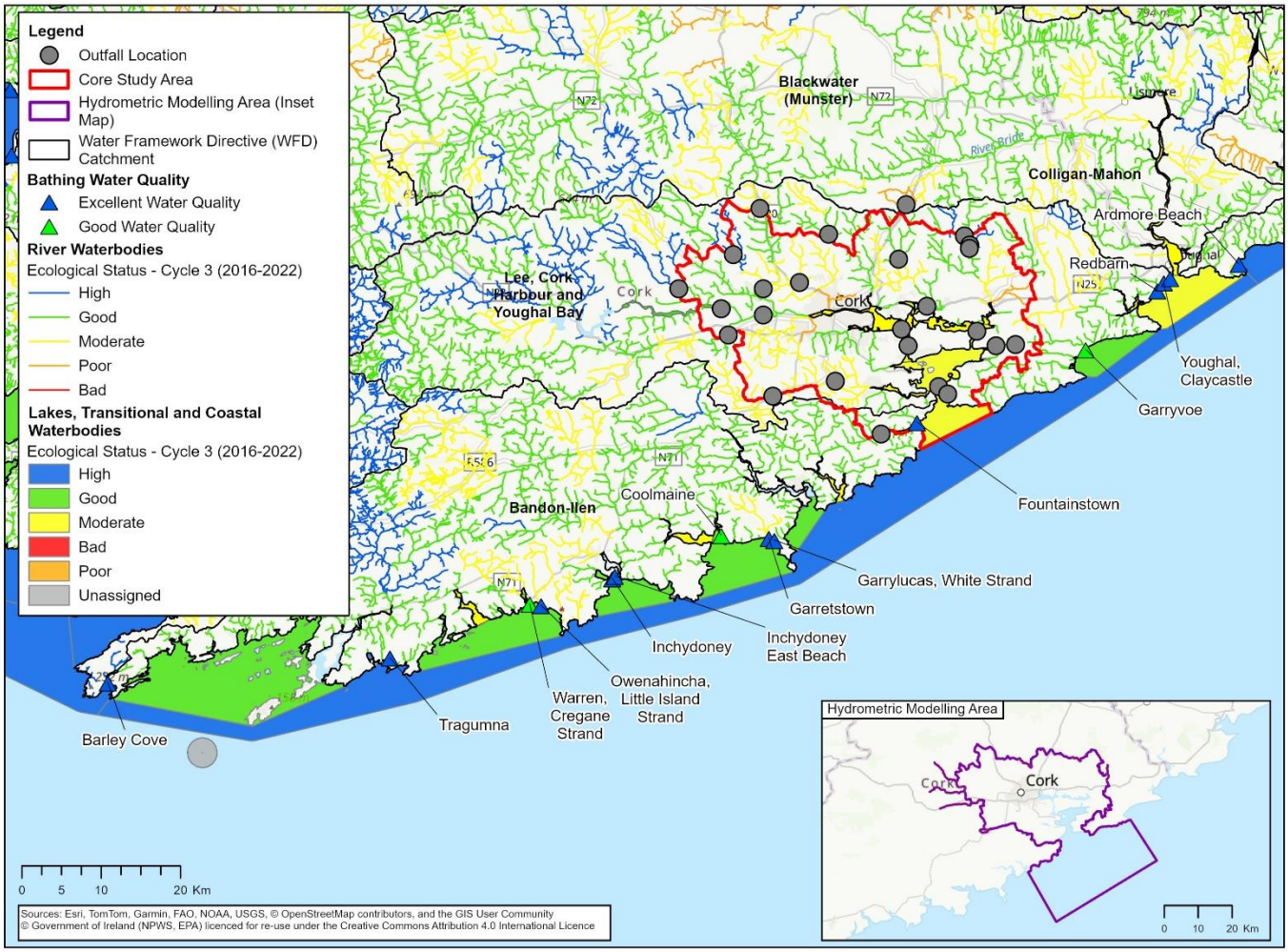

Figure 5-1 WFD ecological status (cycle 3 2016 – 2022) of surface waterbodies and bathing water quality[25]

[25] Environmental Protection Agency (EPA). 2016. WFD Status. Accessed: May 2025. Available from: https://gis.epa.ie/GetData/Download

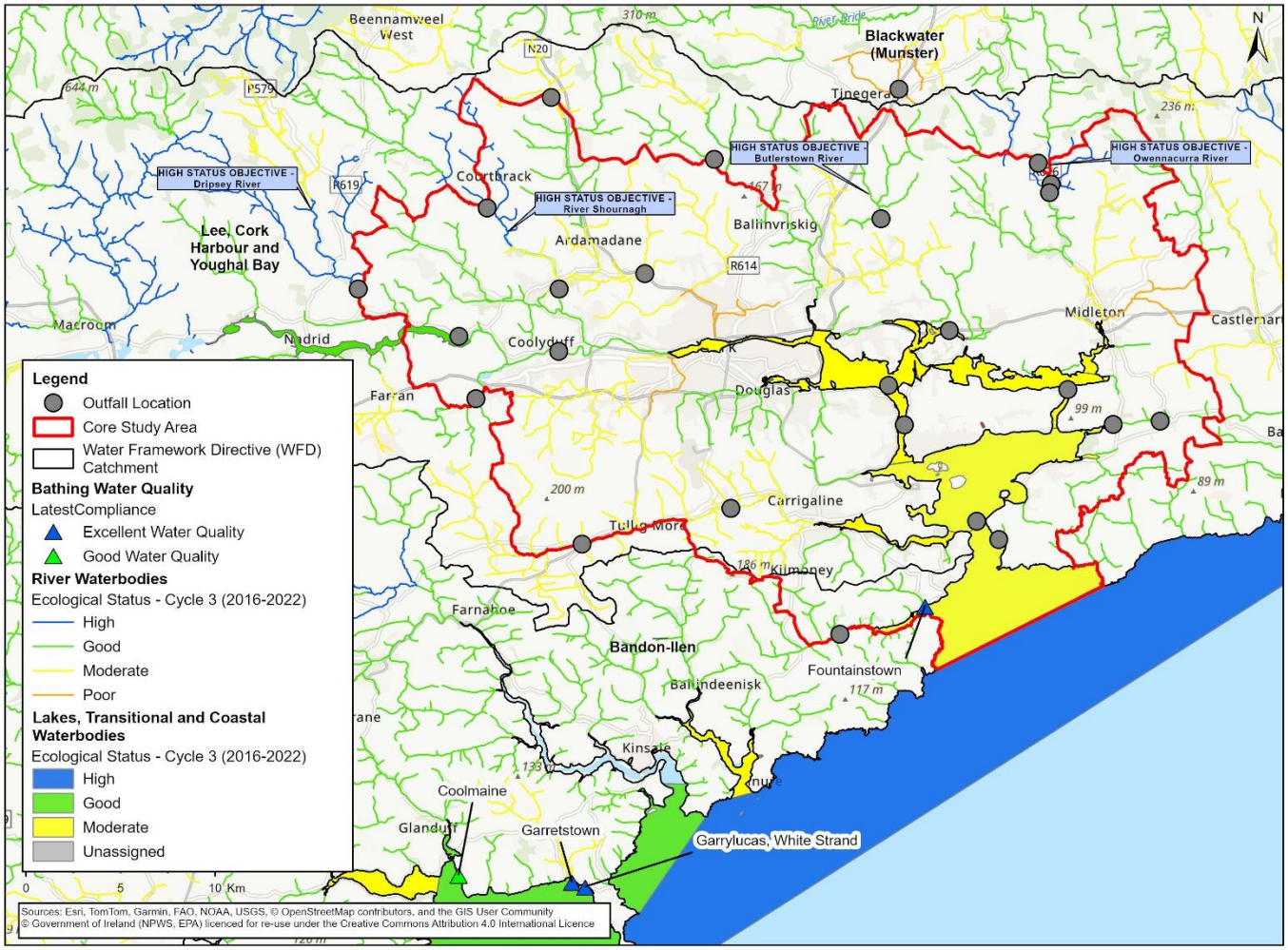

Figure 5-2 WFD ecological status (cycle 3 2016 – 2022) and High Status Objective of surface waterbodies

Water Quality

Ireland has seen a continuing decline in high status waterbodies and an increase in the number of waterbodies in poor ecological health. Even more stark is the dramatic reduction in the number of the most pristine rivers, which have fallen in 30 years from over 500 sites in 1990 to only 20 sites in 2020. The EPA also urge that focus should be given to protecting estuaries, as these waterbodies have the worst status overall and specific measures for their improvement and protection are needed[26].

The EPA 2022 assessment also identified that 88% of surface waterbodies achieved good chemical status when ubiquitous substances were excluded (for example mercury and polycyclic aromatic hydrocarbons (PAHs)).

The RBMP catchment characterisation assessment focuses on identifying the water bodies that are 'At Risk' of not meeting the Water Framework Directive environmental objectives of achieving at least good status. Risk is assessed using the water quality monitoring data, the trends over time and the target objective. For water bodies that are 'At Risk', the assessment also identifies the significant pressures impacting on the waters. 'At Risk' and associated Significant Pressure categories for the study area are identified in Table 5.3. Waterbodies with WwTP discharges are identified in Table 5.4. As indicated in Table 5.3 below, a range of pollution sources are important for at risk pressures on waterbodies.

[26] Environmental Protection Agency (EPA). 2022. Catchments. Accessed: March 2025. Available from:

https://gis.epa.ie/GetData/Download

Table 5.3 Study Area WFD 'At Risk' Waterbodies (2022)[27]

'At Risk' Significant Pressure Category	Waterbody Type				
	Rivers	Lakes	Groundwater	Transitional	Coastal
Urban Waste Water	-	-	-	-	1
Domestic Waste Water	1	-	-	-	-
Urban Run-off	5	-	-	4	1
Agriculture	7	-	3	3	-
Hydromorphology	7	-	-		
Anthropogenic Pressures	4	1	-	-	-
Extractive Industry	-	-	1	-	-
Waste	-	-	1	-	-

Table 5.4 WFD Status (cycle 3 2016 - 2021) and Risk (2022) of Discharge Waterbodies within the Study Area

Discharge Waterbody	Sub catchment	WwTP	WFD Status	Risk Status and Category	High Status Objective List
Shournagh_030 (River Shournagh)	1	Blarney	Moderate	At Risk: Urban Run-off	Yes
Shournagh_020 (River Shournagh)		Courtbrack	High	At Risk: Hydromorphology	Yes
Dripsey_020 (Dripsey River)		Dripsey	High	At Risk: Hydromorphology	Yes
Inniscarra Lake		Inniscarra	Good	At Risk - Anthropogenic Pressure	No

[27] Environmental Protection Agency (EPA). 2022. WFD Waterbodies Risk. Accessed: June 2025. Available from: https://gis.epa.ie/GetData/Download

Discharge Waterbody	Sub catchment	WwTP	WFD Status	Risk Status and Category	High Status Objective List
Blarney_010 (Blarney River)	2	Kileens	Moderate	At Risk: Agriculture	No
Glashaboy (Lough Mahon)_020 (River Glashaboy)	3	Carrignavar	Good	Under Review	No
Martin_010 (River Martin)		Grenagh	Moderate	At Risk: Hydromorphology	No
Butlerstown_020 (Butlerstown River)	4	Knockraha	Good	Not At Risk	Yes
Flesk (Bride)_010 (River Flesk)		Watergrasshill	Poor	At Risk: Industry	No
Lough Mahon	5	Carrigrennan	Moderate	At Risk: Urban Waste Water	No
Owenboy (Cork)_030 (River Owenboy)	6	Ballygarvan	Moderate	Under Review	No
Owenboy (Cork)_020 (River Owenboy)		Halfway	Moderate	At Risk: Agriculture	No
Minane (Cork)_010 (Minane River)		Minane Bridge (River Valley)	Good	Under Review	No
Lee (Cork)_090 (River Lee)	7	Ballincollig	Good	At Risk: Anthropogenic Pressures	No
Bride (Lee) (River Bride)		Killumney	Good	Not At Risk	No
Cork Harbour	8	Cork Lower Harbour	Moderate	Waterbody At Risk: Urban Run-off	No
Lough Mahon (Harper's Island) (Slatty Water)	9	Carrigtwohill	Moderate	At Risk: Urban Run-off	No
North Channel Great Island		Midleton	Moderate	At Risk: Agriculture	No

Discharge Waterbody	Sub catchment	WwTP	WFD Status	Risk Status and Category	High Status Objective List
Knocknamadderee_010 (Knocknamadderee River)	10	Cloyne	Good	Not At Risk	No
Knocknamadderee_010 /Cork Harbour		Saleen	Good/Moderate	Not At Risk / At Risk Urban run-off	No/No
Lough Mahon		North Cobh	Moderate	At Risk	No
Outer Cork Harbour		Whitegate and Sghada	Moderate	Not At Risk	No
Owennacurra_030 (Owencurra River)	11	Lisgoold South	Good	Not At Risk	No

Rivers

Total length of river waterbodies within the zone of influence (based on the hydrometric modelling area) is 984 km (excluding River Flesk in Blackwater (Munster) WFD catchment). A total of 55% of these achieved high or good 2016 – 2021 WFD ecological status; 36% achieved moderate status and 9% achieved poor status. Approximately half of the river waterbodies are identified as WFD status 'at risk ' with 13 currently under review[28]. Table 5.5 presents ecological status of rivers within the zone of influence.

Table 5.5 Cycle 3 2016 - 2021ecological status of river waterbodies within the zone of influence

WFD catchment	Number of river waterbodies	WFD ecological status					At risk
		High	Good	Moderate	Poor	Bad	
Bandon-Ilen	1	0	1	0	0	0	0
Lee, Cork Harbour and Youghal Bay	45	3	22	17	3	0	24
Blackwater (Munster)	1	0	0	0	1	0	1

*Watergrasshill WwTP discharges to River Flesk in WFD Blackwater (Munster) catchment which is located outside of the Study Area boundary but is included in this Strategy.

[28] Environmental Protection Agency (EPA). 2021. WFD Cycle 3 Waterbodies. Accessed: March 2025. Available from: https://gis.epa.ie/GetData/Download

Lakes

Lough Inniscarra is the only lake waterbody within the hydrometric modelling area, covering 4.9 km^2. The waterbody achieved good 2016 – 2021 WFD ecological status and is classed as at risk[28] due to unknown anthropogenic pressures[29].

Groundwater waterbodies

Groundwater waterbodies cover 815 km^2 of the surface water hydrometric modelling area. All of the 19 waterbodies bar one achieved good WFD 2016 – 2021 WFD status. Five groundwater waterbodies are classed as at risk and five are currently under review[28]. **Figure 5-3** and Table 5.6 present WFD status of groundwater bodies within the Core Study area and surrounding area.

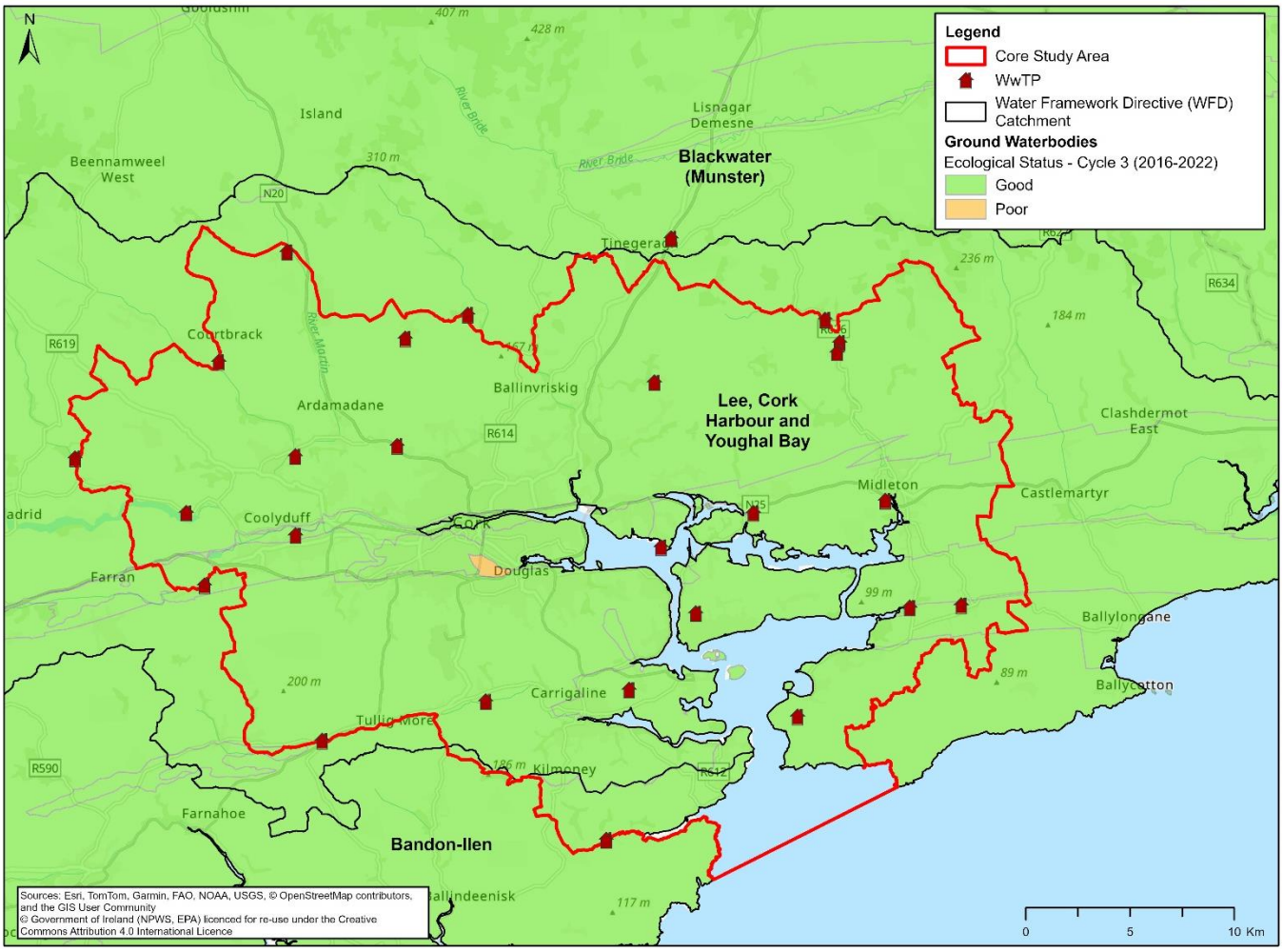

Figure 5-3 WFD status of groundwater waterbodies[30]

[29] Environment Protection Agency (EPA). 2024. 3rd Cycle Draft Lee, Cork Harbour and Youghal Bay Catchment Report (HA 19). Accessed: March 2025. Available from: https://catchments.ie/wp-content/files/catchmentassessments/

[30] Environmental Protection Agency (EPA). 2021. WFD Groundwater Status. Accessed: March 2025. Available from:

https://gis.epa.ie/GetData/Download

Table 5.6 Status of groundwater waterbodies within the zone of influence

WFD catchment	Number of waterbodies	WFD status		At risk
		Good	Poor	
Blackwater (Munster)	1	1	0	1
Lee, Cork Harbour and Youghal Bay	16	15	1	3
Bandon-Ilen	2	2	0	1

Transitional (Estuarine) and Coastal Waters

Transitional and coastal waterbodies cover 303 km^2 of the hydrometric modelling area. 12% of these achieved high or good 2016 – 2021 WFD ecological status; 63% achieved moderate status; 13% achieved bad status and 13% of the waterbodies were unassigned. Over half of the waterbodies have WFD At risk status and five are currently under review[28].

Table 5.7 Transitional and coastal waterbodies intersecting with the zone of influence

WFD catchment	Number of waterbodies	WFD ecological status						At risk
	High	Good	Moderate		Poor	Bad	Unassigned	
Colligan-Mahon (borders only)	1	1	0	0	0	0	0	0
Lee, Cork Harbour and Youghal Bay	15	0	1	10	0	2	2	9

Marine Environment

The temperate waters that surround Ireland are highly productive and provide a rich mosaic of marine life. The assessment of the wider marine areas is covered under the EU Marine Strategy framework Directive.

Ireland's location in the Atlantic Ocean on the edge of the European continent has meant that its marine environment has remained relatively unpolluted. In recent years, however, the level of environmental stress, from both internal and external sources, has increased. Coastal development, particularly during the 1990s, has resulted in an increase in the range and magnitude of pressures that have the potential to impact negatively on the quality of Ireland's tidal waters.

Nutrient Sensitive Areas

Nutrient sensitive areas are designated under the Urban Waste Water Treatment (UWWT) Directive 91/271/EEC. These areas are used to represent the waterbody containing the sensitive area. Waters may be identified as 'Sensitive (Eutrophic)' if found to contain excessive levels of nutrient waste as outlined by both the UWWT or Nitrates Directives, or likely to become eutrophic if preventative action is not taken. There are two transitional waterbodies classified as nutrient sensitive areas within the hydrometric modelling area: the Lee Estuary/Lough Mahon and Owencurra Estuary/North Channel (see Figure 5-4). These areas are targeted for nutrient reduction measures under the Urban Waste Water Treatment (UWWT) Directive.

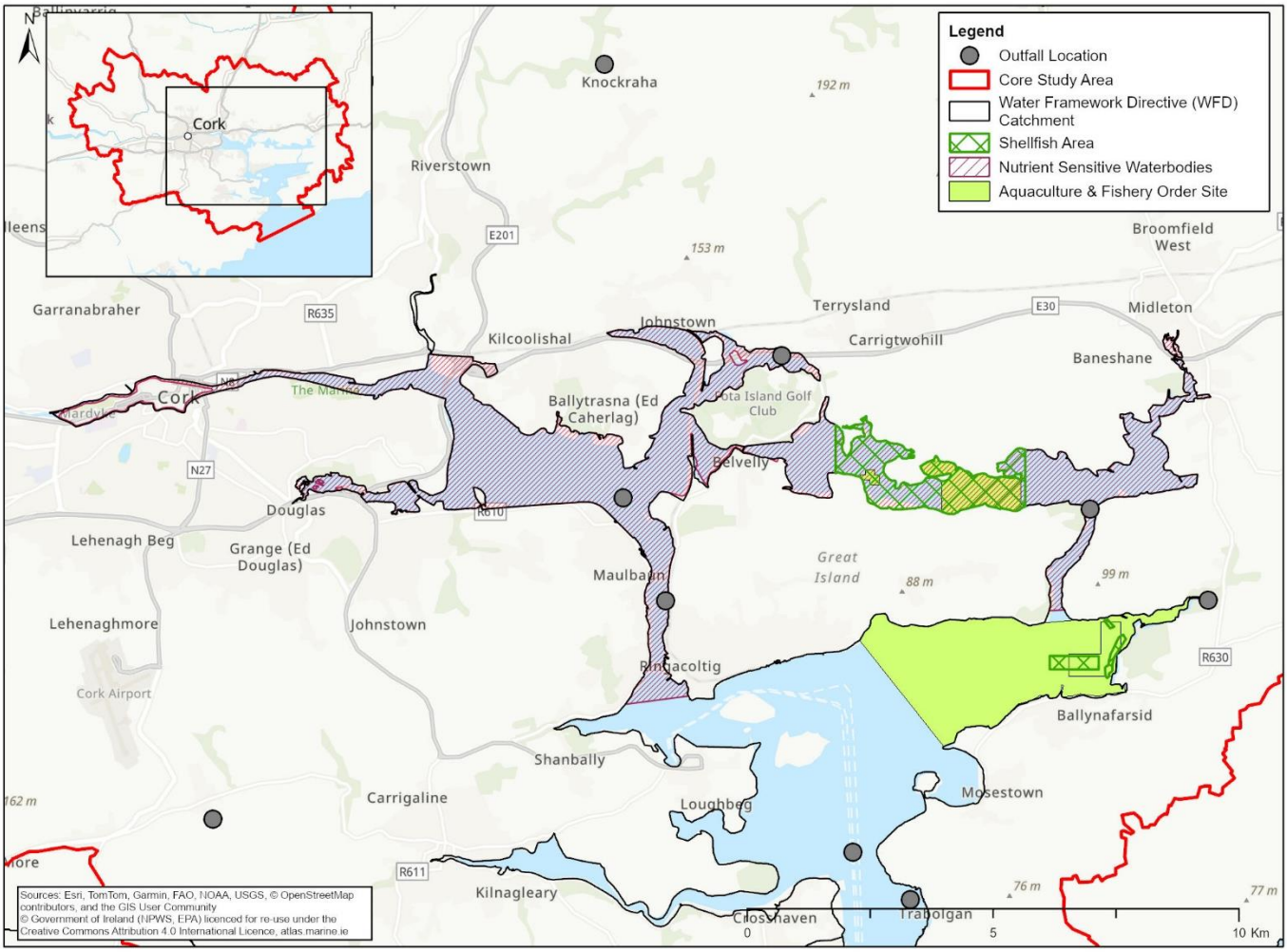

Figure 5-4 Nutrient sensitive areas and shellfish areas[31,32]

Sources of Pollution

Significant pressures were identified for 39 waterbodies within the zone of influence (based on the hydrometric modelling area) and these are noted in Table 5.8[33]. Urban run-off accounts for 26% (5 river; one coastal; and four transitional waterbodies) and urban waste water accounts for 3% (one transitional waterbody, namely Lough Mahon) of the significant pressures on all types of water bodies within the zone of influence. The local authorities are responsible for storm water management through the planning regulations in terms of regulation and mitigation.

[31] Department of Housing, Local Government, and Heritage (DHLGH). 2017. Shellfish Waters Directive Areas. Accessed: March 2025. Available from: https://data.gov.ie/dataset/shellfish-waters-directive-areas

[32] Environmental Protection Agency (EPA). 2022. Nutrient Sensitive Areas. Accessed: March 2025. Available from:

https://data.gov.ie/dataset/register-of-protected-areas-nutrient-sensitive-areas

[33] Environmental Protection Agency (EPA). 2022. WFD Significant pressures. Accessed: March 2025. Available from:

https://gis.epa.ie/GetData/Download

Table 5.8 Significant pressures on a number waterbodies within the zone of influence

Pressure category	Waterbody type			
	Rivers	Coastal and transitional	Lakes	Groundwater
Abstractions	0	0	0	0
Agriculture	7	3	0	3
Anthropogenic Pressures	4	0	1	0
Hydromorphology	7	0	0	0
Urban Run-off	5	5	0	0
Urban Waste Water	0	1	0	0
Forestry	0	0	0	0
Extractive Industry	0	0	0	0
Waste	0	0	0	1

5.8.2 Flood Risk

Flooding has become a greater issue in Ireland in recent years; the frequency of flood events has been increasing and with climate change, is expected to increase further. Increased flooding can cause pressure on drains and sewers affecting wastewater treatment plant operation and release of untreated stormwaters due to flood events affecting surface water quality. Flood events also increase nutrient rich sediment run off from agricultural and forestry land also affecting water quality.

The Floods Directive (2007/60/EC) required member states to develop Flood Risk Management Plans for areas of existing and future potentially significant flood risk. The Floods Directive was transposed into Irish law by the EU (Assessment and Management of Flood Risks) Regulations 2010 and sets out the responsibilities of the OPW.

The OPW has been implementing the Directive mainly through the Catchment-based Flood Risk Assessment and Management (CFRAM) Programme[34]. CFRAM mapping for all Areas for Further Assessment is available to view on the CFRAM website[34]. There are five Areas for Further Assessment (AFAs) identified in the study area: Cork City, Glanmire, Carragaline, Tower, Middleton and Ballynacorra.

An increase in likelihood of river and coastal flooding is predicted across Ireland from climate change projections. All of Ireland's major cities are located in coastal areas subject to tides, and a significant rise in sea levels will have major economic, social and environmental impacts.

This includes flood risks to water and wastewater services either directly or indirectly by affecting power supply or transport access for water services operation and also through impacts to customers experiencing the effects of inundation of residential areas and businesses.

High probability of fluvial flooding within the hydrometric modelling area has been identified in Cork City along River Lee and Lough Inniscarra, as well as in Blarney along Rivers Martin and Shournagh. Coastal high probability flooding has been identified for the areas adjacent to Lough Mahon and Cork Harbour, including parts of Carrigaline, Crosshaven, Cobh, Rostellan, Midleton, Ballynacorra, and Cork[35]. Figure 5-5 shows areas

[34] Office of Public Works (OPW). 2018. Catchment Flood Risk Assessment and Management Programme. Accessed: March 2025. Available from: https://www.floodinfo.ie/map/floodplans

[35] Office of Public Works (OPW). 2023. Flood Maps. Accessed: March 2025. Available from: https://www.floodinfo.ie/map/floodmaps/

with medium or high probability of fluvial or coastal flooding within the hydrometric modelling area. No areas of medium or high probability of groundwater flooding have been identified.

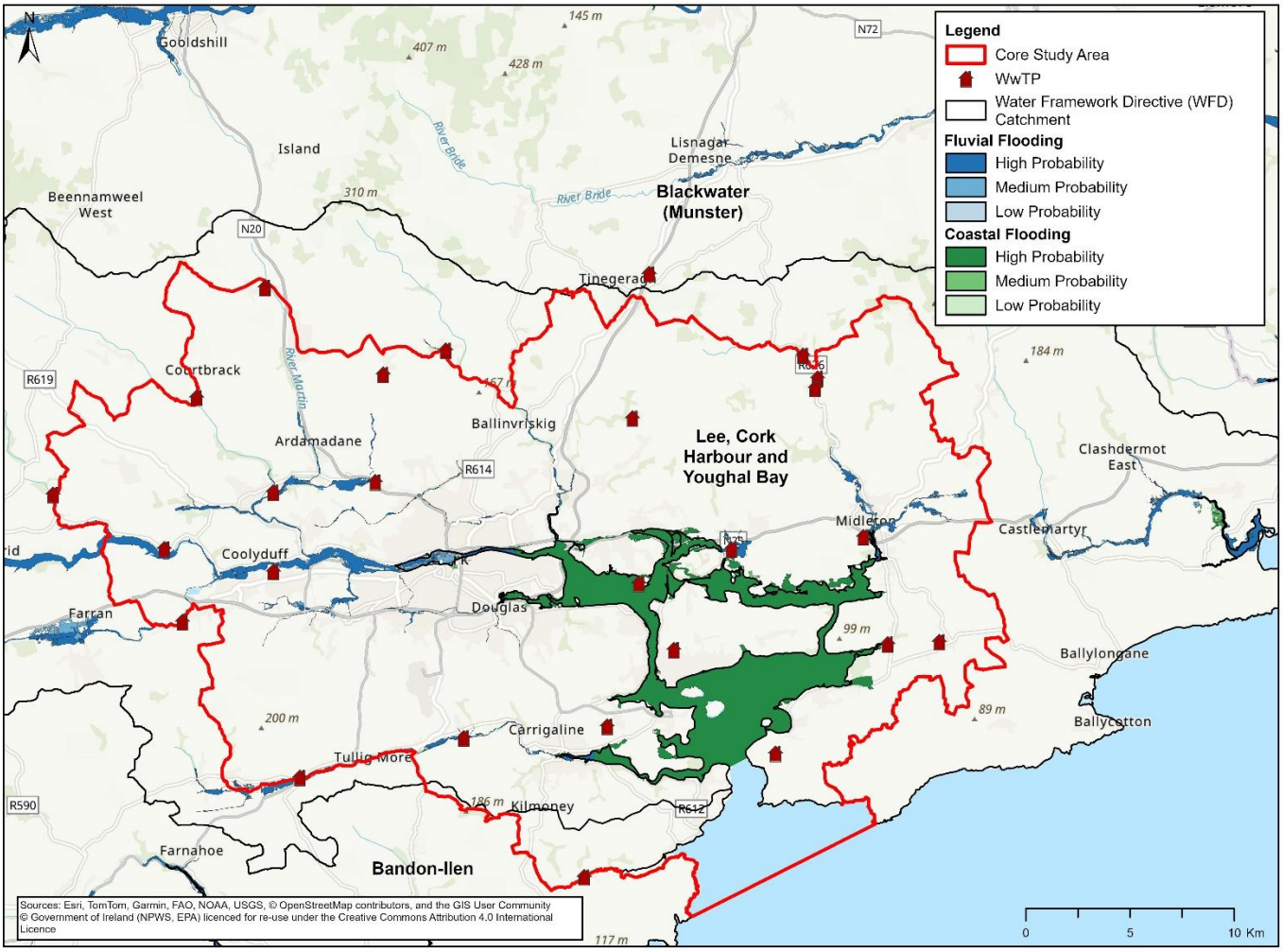

Figure 5-5 Fluvial and coastal flood risk[36]

5.8.3 Future Trends

WFD environmental objectives

The second cycle River Basin Management Plan 2018 - 2021[5] set out a programme of measures to improve water quality. The third cycle Water Action Plan 2024 (A River Basin Management Plan for Ireland) [6] sets out how Ireland will manage its water resources and catchments up to 2027. The overall aim of the plan is to ensure that our natural waters are sustainably managed and that freshwater resources are protected so as to maintain and improve Ireland's water environment. Cycle 3 ecological status data can be used to assess progress against the environmental objectives that the programme of measures set out in the plan was designed to achieve.

The evidence shows that there have been both improvements and declines in the water quality in all water body types between 2013-2018 (cycle 2) and the 2016-2021 (cycle 3) assessment period within the WFD Zone of Influence (ZOI). In 2013-2018, 43% (35 waterbodies) of all waterbodies within the WFD ZOI achieved their environmental objective (have high or good WFD ecological status[37]) whilst in 2016-2021, 57% (47 waterbodies) achieved their ecological objective. Cycle 2 saw 22 waterbodies with unassigned status of which

[36] Office of Public Works (OPW). N.d. Flood Map. Accessed: April 2025. Available from: https://www.floodinfo.ie/

[37] The Water Forum. 2022. Introduction to the Water Framework Directive (WFD). Accessed: March 2025. Available from: https://thewaterforum.ie/

11 had high or good status and 9 had below good status in Cycle 3. A total of 6 waterbodies have deteriorated and the status of 2 waterbodies remains unassigned. The Water Action Plan 2024 (RBMP for Ireland)[6] proposes 26 areas for focused action and collaboration by a range of bodies including the Local Authority Waters. Programme (LAWPRO), local authorities, public bodies, and stakeholders as part of implementation of the 3rd Cycle for implementation of the EU Water Framework Directive in Ireland. There is one objective for action: restoration (for all 26 waterbodies); five of which are high status objective waterbodies. In June 2022, LAWPRO introduced a new element to their work programme called the Q5 River Engagement Initiative. The funding was directed towards 24 rivers in Ireland, including River Lee located west of the core study area.

Agricultural policy and water protection

A significant proportion of water pollution arises from agricultural land. Teagasc (Agriculture and Food Development Authority) identify a risk-based approach to identifying areas of diffuse pollution on farmland with the highest risk of affecting a waterbody. The approach can support the work of LAWPRO and Agricultural Sustainability Support and Advisory Programme (ASSAP) which have been addressing the second cycle PAAs to focus land management measures where they will be most effective. Recommendations[38] have been made to extend ASSAP as part of supporting the forthcoming third cycle RBMP. Many of the areas of action proposed in the Water Action Plan 2024 (RBMP for Ireland) mentioned above will aim to address pollution from agricultural land.

The National Action Programme under the Nitrates Directive will provide an opportunity to evaluate the need to amend existing farm management measures under the programme. Measures will be required to address the issues identified during farm inspections such as inadequate management of animal manures, contamination of waters by run-off from farmyards and structural defects in manure storage facilities.

Local community initiatives

To deliver significant improvements in the condition of waters it will be important to generate and harness bottom-up community involvement and ownership of the environmental issues, for example through the formation of River Trusts. Funds available from the Community Water Fund and from national and European research projects (LEADER and LIFE projects) are providing opportunities for local communities and farmers to get involved in local water quality catchment-based projects. Local community initiatives, with the support of the LAWPRO, have the potential to tackle threats to water protection and restoration more effectively by examining the risks and developing tailored solutions at a local level.

Citizen science also provides an opportunity for local communities to get involved in science projects to inform on the quality of the aquatic environment. The Dragonfly Ireland 2019-2024 project is seeking volunteers to record sightings of dragonflies and damselflies while the Explore Your Shore project is looking for volunteers to identify the different types of animals and plants found in seashore rockpools. An example of citizen science in practice can be seen from activity in Cork City in 2022 resulting in 20 sampling points surveyed across the city.

Urban wastewater

The recast UWWTD entered into force on 1 January 2025. The main changes between the Urban Wastewater Treatment Directive (UWWTD) and its recast version (often referred to as the UWWTD recast or UWWTD 91/271/EEC recast) primarily involve updates and enhancements aimed at improving water quality and environmental protection standards across the EU. The revision of this directive is one of the key deliverables under the EU's zero pollution action plan and aims to update the current directive by extending its scope and aligning it with the European Green Deal's objectives.

The directive is to be transposed into Irish legislation and the key amendments it will bring include:

[38] Teagasc. 2021. External Expert Assessment of the Agricultural Sustainability Support and Advisory Programme (ASSAP) Report of the Independent Review Panel 12 October 2021. Accessed: March 2025. Available from: https://www.teagasc.ie/media/website/crops/ASSAP-Expert-Review-Final-Report---pdf--22-Nov-2021.pdf

Scope and Definitions: The recast clarifies and updates definitions related to wastewater treatment and discharge, ensuring consistency and alignment with current environmental standards.

Nutrient Removal Requirements: The recast strengthens requirements for nutrient removal, particularly for nitrogen and phosphorus, to reduce eutrophication in receiving waters. This includes stricter standards for sensitive areas such as coastal waters and freshwater bodies.

Implementation Deadlines: The recast sets revised deadlines for member states to comply with the directive's requirements, reflecting technological advancements and the need for accelerated environmental improvements.

- All agglomerations of 1,000PE or more to require an urban wastewater collecting system by 2035;
- Tertiary treatment to be required for treatment of urban wastewater for all agglomerations of 150,000 PE or more by 2039; and by 2045 for those agglomerations greater than 10,000 PE.
- Quaternary treatment for removal of a broad spectrum of micropollutants to be mandatory for all WwTPs of over 150,000 PE by 2045 (and by risk assessment over 10,000PE);

Monitoring and Reporting: Enhanced provisions for monitoring and reporting on the performance of wastewater treatment plants and the quality of discharged water are included in the recast. This ensures transparency and accountability in achieving environmental objectives.

- Increased Monitoring Requirements (frequency of sampling, sludge destinations, SWO monitoring etc.).
- The monitoring of various public health parameters (such as known viruses and emerging pathogens), chemical pollutants, including so-called "forever chemicals" (per- and polyfluoroalkyl substances or PFAS), microplastics and antimicrobial resistance will be strictly monitored.
- Introducing health parameters to monitor pandemics.

Since 2014 there have been significant improvements in wastewater treatment and discharges and this is recognised in the Water Action Plan 2024 (RBMP for Ireland). However, the existing infrastructure is ageing and dispersed while regulation standards are becoming more stringent. Significant investment will therefore be required to improve performance and reduce water pollution but this will not be achievable in the short term. The EPA highlighted urban areas (in mid-2022) where treatment must improve as a priority for the below urban areas within the core study area to address the following[39]:

- Cork City: inadequate treatment - failed EU treatment standards; inadequate collecting system (sewers) - failed EU requirements; significant pressure on waters at risk of pollution.
- Midleton: inadequate collecting system (sewers) - failed EU requirements.
- Whitegate: Agada: no treatment - discharging raw sewage.

A range of completed or ongoing investment measures for these areas are outlined in the draft CWS as well as the longer term proposals.

Marine Planning Reform

As part of implementing the EU Marine Spatial Planning Directive (2014/89/EU), Ireland's National Marine Planning Framework (NMPF) (2021) has been produced to provide guidance for activities and developments affecting the marine environment up to 2040. The Maritime Area Planning Act 2021 (as amended), was enacted in 2021 and the Maritime Area Regulatory Authority (MARA) was established in July 2023 - together these introduce a new legislative regime around consent for development and activities in the marine area. The NMPF provides policies for sustainable planning and management of marine resources, balancing ecological, economic and social objectives in relation to aspects such as the environment, biodiversity,

[39] Environment Protection Agency (EPA). 2023. List of priority urban areas. Accessed: March 2025. Available from: https://www.epa.ie/publications/compliance--enforcement/waste-water/priority-areas-list-current.php

commercial fisheries and renewable energy. As part of this, the NMPF includes specific objectives and planning policies related to water quality and to wastewater treatment and disposal.

Impacts of climate change on the water environment

Climate change impacts on the water environment within the hydrometric modelling area identified by the Cork City Council[40] include:

- Recent experiences of tidal flooding in 2020, and 2021, resulted in the submergence of transport routes, damage to automobiles (e.g. Morrison's Island), inundation of buildings, and increased pressure on emergency services. Rising sea levels will increase the frequency of tidal inundation, resulting in an increased flood risk for Cork City.
- Pluvial and fluvial flooding already pose a significant risk for Cork City and have resulted in the inundation of homes (e.g. Glanmire) and buildings (e.g. Douglas Shopping Centre), disruption of transport networks (e.g. South City Link Rd), increased pressure on emergency services (e.g. evacuation of residents in 2009), and the closure of public amenities (e.g. Mardyke Arena). Projected increases in the frequency of extreme precipitation events will result in increased surface water and riverine flood risk for Cork City.

Cork City experienced both a heatwave and a drought in 2018, with heatwaves also recorded in 2022. These events placed an increased demand on water resources, and also put increased pressure on recreational areas (e g. the Lough). Droughts effectively reduce the dilution potential in receiving waters and increase risk of discharges reducing water quality and aquatic biodiversity and the wastewater discharges in river waterbodies can effectively form a greater part of the river base flow during low flow events. Projected increases in the frequency of heatwaves and drought conditions will mean that events currently experienced will become more frequent and the capacity of the water environment to cope with discharges could be reduced.

Recent experiences of cold spells and heavy snowfall events in 2018 (e.g. Storm Emma) and 2022 demonstrated the wide range of impacts for Cork City. These included, amongst others, damage to wastewater infrastructure and disruption of services, cancellation of public transport, and widespread business and economic impacts. Projected increases in average temperature and decreases in the frequency of snowfall indicate a decrease in the frequency of cold spells, heavy snow fall, and their associated impacts.

Table 5.9 Key conclusions from the Water Section of the State of the Environment Report 2024[22]

Policy Area	Current assessment	Predicted Outlook	Key conclusions*
River water quality			Only half (50%) of Ireland's rivers are in satisfactory ecological condition (55% in CWS Study Area). There has been no net improvement in river biological quality in recent years. Moreover, 42% of river sites, mostly in the south and south-east of the country, have unsatisfactory nitrate concentrations, while over a quarter of river sites (27%) have unsatisfactory phosphorous concentrations.
Lake water quality			Some 69% of Ireland's lakes are in satisfactory ecological condition (only one lake waterbody in the CWS Study Area). There has been a slight (2.7%) decrease in the proportion of lakes in satisfactory

[40] Cork City Council. 2024. Climate Neutral Cork City. Cork City Climate Action Plan 2024-2029. Climate Change Risk Assessment. Accessed: March 2025. Available from: https://www.corkcity.ie/en/climate-action/

			biological condition in recent years, with over one-third (35%) of lakes having high phosphorous concentrations, particularly in the north-east of the country.
Transitional water quality			Only 36% of Ireland's transitional waters (estuaries) are in satisfactory ecological condition (9% in CWS Study Area). In recent years there has been a sharp decline (15.7%) in the number of monitored estuaries in satisfactory condition. The transitional waters in less than good ecological status are located primarily in the south and southeast of the country.
Coastal water quality			Most (81%) of Ireland's coastal waters are in satisfactory ecological condition (33% in CWS Study Area). However, in recent years there has been a significant decline (9.5%) in the number of monitored coastal water bodies in satisfactory ecological condition.
Groundwater quality			91% of groundwater bodies are in good chemical and good quantitative status (95% in CWS Study Area). In recent years there has been a very slight decline (0.8%; four water bodies) in the number of groundwater bodies assessed as having good status.

5.8.4 Key Considerations for CWS and the SEA

This section summarises the key challenges and opportunities to be taken into account in the environmental assessment of the CWS related to the water environment.

Challenges:

- Additional pressures on the aquatic environment related to climate change and increased frequency of drought periods.
- Water pollution from wastewater discharge, storm water overflows, and sewer network flooding affecting receiving waterbodies including rivers, lakes, transitional and coastal waterbody ecosystems and contributing to effects on aquatic ecology, bathing waters, recreation and fisheries.
- Stormwater management: separating the wastewater and stormwater network, reducing the number of combined sewer overflows and potential to increase the use of Sustainable Urban Drainage Schemes (SUDS) including Nature based solutions (NbS), in new development.
- Wastewater management: upgrading and maintaining wastewater treatment plants to address existing and also new contaminants and to meet existing and future standards and protect the environment.
- Water pollution including from diffuse sources such as agriculture forestry and urban runoff affecting raw water quality affecting drinking water treatment requirements, health and aquatic ecology and this can affect the background water quality for wastewater discharges with implications for the capacity of receiving waters.
- Challenges from climate change increasing pressure on the natural environment and increased risks for infrastructure – importance of supporting environmental resilience especially in terms of

receiving waterbodies affected by wastewater discharges and developing infrastructure and operational resilience of wastewater services.

Opportunities:

- Understanding the pressures and effects on the water environment better and improving data, monitoring, knowledge sharing and making use of new digital and mapping technologies.
- Opportunities for collaboration with a range of stakeholders particularly in relation to addressing catchment wide issues, and developing new approaches including considering ecosystem services and valuing the wider benefits from nature-based solutions and catchment management.

5.9 Population, Economy, Tourism and Recreation, and Human Health

5.9.1 Population Baseline Condition and Projected Growth

Census 2022 population for settlements within the CMA was recorded as 307,493, with Cork City and Suburbs recorded as 228,605 by the CSO 2022. Table 5.10 shows the population for settlements within the CMA as reported by the CSO 2022 and population projections for years 2030, 2055 and 2080.

The residential population of the study area of Cork Wastewater Strategy is anticipated to be 374,564 in 2030; 482,102 in 2055; and 533,226 in 2080. The total population equivalent, which includes both residential population and non-residential loading is expected to be 598,937 in 2030, 746,815 in 2055, and 816,945 in 2080.

The future population of CWS settlements were determined by applying the following steps:

- Analysis of Census 2016 and Census 2022 results to determine the past population growth trends;
- Analysis of CSO Small Areas and GeoDirectory data to obtain the settlement boundaries and number of existing units;
- Identification of future development zones from Cork City Development Plan 2022-2028 and Cork County Development Plan 2022-2028;
- Review of previous studies regarding the population projections both in regional and national levels;
- Determination of future population targets and population growth rates of all settlements in CMA;
- Determination of the spatial distribution of the additional residents in each town for each needs model (2030, 2055, and 2080) considering the future development zones;
- Determination of non-residential loads such as commercial, institutional and industrial; and
- Application of headroom to manage the risks associated with growth potential.

Table 5.10 Census 2022 and projected 2030, 2055 and 2080 population for settlements within the CMA (CSO 2022 source and projections from Population and Land Use Assessment)

Area	2022 CSO population	2030 population projection	Annual growth (%)	2055 population projection	Annual growth (%)	2080 population projection	Annual growth (%)
Ballincurrig	389	425	1.08	511	0.57	569	0.43
Ballygarvan	556	697	1.43	809	0.49	896	0.47
Ballymore	295	318	0.89	362	0.40	397	0.37

Area		2022 CSO population	2030 population projection	Annual growth (%)	2055 population projection	Annual growth (%)	2080 population projection	Annual growth (%)
Berrings		440	475	0.96	541	0.41	594	0.37
Carrigaline		18,239	21,275	1.89	26,082	0.66	29,400	0.48
Carrignavar		563	680	2.36	828	0.57	921	0.43
Carrigtwohill		5,568	10,512	3.84	12,874	0.48	14,128	0.40
Cloyne		1,967	2,398	1.82	2,859	0.48	3,160	0.4
Cobh		14,148	16,338	1.57	19,968	0.66	22,508	0.48%
Coole East		376	406	0.97	487	0.57	542	0.43
Cork City and Suburbs	City Centre	25,011	27,636	1.25	33,060	0.20	34,753	0.20
	Docklands	1,829	5,909	9.93	10,023	0.37	10,993	0.37
	City Suburbs	153,851	167,729	1.08	201,509	0.37	221,001	0.37
	Ballincollig	19,660	27,099	3.70	42,720	0.49	48,273	0.49
	Blarney	2,779	5,905	7.42	11,534	0.60	13,398	0.60
	Glanmire	10,744	15,340	4.06	23,586	0.37	25,867	0.37
	Tower	3,300	4,161	2.76	5,840	0.37	6,405	0.37
	Hinterland Towns	1,829	2,203	2.26	2,971	0.37	3,258	0.37
	Hinterland (Other)	9,601	10,024	Not available	11,094	Not available	11,660	Not available
Courtbrack		459	495	0.93	564	0.40	618	0.37
Crosshaven		3,263	3,597	0.79	4,247	0.48	4,694	0.40
Glounthaune		1,440	2,600	7.6	3,480	1.17	3,820	0.37
Grenagh		724	781	0.93	937	0.57	1,042	0.43
Halfway		252	272	1.12	313	0.49	348	0.42
Inniscarra		232	250	0.88	301	0.58	335	0.43

Area	2022 CSO population	2030 population projection	Annual growth (%)	2055 population projection	Annual growth (%)	2080 population projection	Annual growth (%)
Killumney/Ovens	1,466	2,424	3.98	2,951	0.48	3,262	0.40
Knockraha	517	553	0.82	630	0.40	691	0.37
Leamlara	476	514	0.98	617	0.58	687	0.43
Lisgoold	325	399	2.60	486	0.57	541	0.43
Little Island	1,461	2,961	9.23	3,965	1.17	4,350	0.37
Matehy	341	368	0.95	441	0.57	491	0.43
Midleton	13,906	20,561	2.89	25,455	0.66	28,694	0.48
Minane Bridge	282	319	1.61	383	0.56	427	0.44
Model Village (Dripsey)	323	471	1.30	544	0.47	602	0.41
Monard	273	2,969	34.77	10,800	2.84	13,500	0.90
Myrtle Village	965	1,042	0.98	1,248	0.57	1,387	0.42
Passage West / Monkstown	6,051	7,118	2.05	8,624	0.57	9,579	0.42
Ringaskiddy - Loughbeg	575	718	1.42	832	0.48	921	0.41
Saleen	601	668	1.22	773	0.48	855	0.40
Cork Lower Harbour	350	378	0.99	430	0.40	472	0.37
Watergrasshill	1,840	2,168	1.85	2,586	0.48	2,859	0.40
Whitechurch	719	818	1.31	946	0.48	1,047	0.41
Whitegate/ Aghada	2,407	2,520	0.56	2,968	0.48	3,281	0.40
Total	310,394	374,564	2.3	482,102	1.01	533,226	0.40

5.9.2 Economy and Employment Baseline Condition

Nomenclature of Territorial Units for Statistics (NUTS) were created by Eurostat to define territorial units for regional statistics. There are eight NUTS3 regions in Ireland, and the study area falls within the South-West NUTS area. As shown in Table 5.11Table 5.11, unemployment rates in the South-West region were lower than the Ireland average in Q4 2023 and 2024 and in 2023, disposable income levels in South-West region were higher than the Ireland average.

The unemployment rate in 2022 was for Cork City Council of 8% and at Cork County Council level, of 6.1%[41].

Table 5.11 Economy and employment statistics [42,43]

Area	Q4 2023 unemployment rates (%)	Q4 2024 unemployment rates (%)	2023 household disposable income estimates per person (€)	2023 Indices of Disposable Income per person (state = 100)
Republic of Ireland	4.2	4.0	28,370	100.0
South-West	3.6	3.1	29,184	102.9

For Cork County, the household disposable income estimate per person in 2023 was of 29,876 Euro and the index of disposable income per person (state=100) of 105.3.

5.9.3 Human Health Baseline Condition

According to Irish Health Survey 2019[44] the key findings regarding the Ireland human health conditions are:

- Affluent people are more likely to feel their health status is very good or good than people who are disadvantaged – 92% of very affluent persons compared to 78% of persons who are Very disadvantaged;
- Over a quarter of persons aged 15 years and over report having a long-lasting condition, with older persons reporting higher levels;
- Majority of persons (82%) report no limitations in everyday activities due to a health problem;
- Over a fifth (21%) of Unemployed persons report some form of mental ill-health compared to 9% of those In employment;
- Prevalence of hospital in-patient admissions rises with age and disadvantage level;
- In general, females and older people more likely to use a preventive health service.;
- Physical activity declines with age and relative disadvantage level;
- Younger persons more likely to drink 6 or more units of alcohol in one sitting; and
- Over half of persons aged 15 years and over in the State are overweight or obese.

The survey is based on self-reported data from persons aged 15 years and over and outlines their view of their health status.

Table 5.12 provides well-being indicators for Cork City Council and Cork County Council Local Authority areas (where available), the South West Nomenclature of Territorial Units for Statistics (NUTS) area and for Ireland. NUTS is a European Union geocode standard for referencing country subdivisions.

[41] Central Statistics Office (CSO). 2023. Administrative Counties 2022. Accessed: March 2025. Available from: FY056A - Rates for Labour Force Participation and Unemployment

[42] Central Statistics Office (CSO). 2025. Labour Force Survey Quarterly Series. QLF08 – ILO Unemployment Rate (15 - 74 years). Accessed: March 2025. Available from: https://data.cso.ie/

[43] Central Statistics Office (CSO). 2025. Labour Force Survey Quarter 4 2024. Accessed: March 2025. Available from: Unemployment Labour Force Survey Quarter 4 2024 - Central Statistics Office

[44] Central Statistics Office (CSO). 2020. Irish Health Survey 2019. Accessed: March 2025. Available from: https://www.cso.ie/en/releasesandpublications/ep/p-ihsmr/irishhealthsurvey2019-mainresults/healthstatus/

Table 5.12 Well-being indicators of persons aged 15 years and over[45]

Well-being indicator		Republic of Ireland	South-West	Cork County Council	Cork City Council
Self-perceived health status	Very good or good (%)	85	84	87	85
	Fair (%)	12	12	37	8
	Bad or very bad (%)	3	4	1	2
Prevalence of long-lasting condition (%)	Yes (%)	26	29	ND	ND
	No (%)	74	71	ND	ND
Limitations in everyday activities due to a health problem	Severely Limited (%)	5	6	ND	ND
	Limited but not severely (%)	13	16	ND	ND
	Not limited at all (%)	82	78	ND	ND
Mental health status in previous two weeks	None to minimal depression (%)	86	83	ND	ND
	Mild depression (%)	9	11	ND	ND
	Moderate depression (%)	3	4	ND	ND
	Moderately severe or severe depression (%)	2	3	ND	ND
Average number of days absent from work due to a health problem	Absent from work due to a health related problem (%)	20	19	ND	ND
	Average number of days absent (days)	4.1	4.3	ND	ND

Table 5.13 provides an overview of participation in different types of physical activities in the South West NUTS region compared to Ireland.

Table 5.13 National and Regional participation in physical activity of persons aged 15 years and over

Activity	Participation (%)	
	Republic of Ireland*	South-West
Walk to get to and from places (2019)	81	81

[45] Central Statistics Office (CSO). 2023. SAP2022T12T3CTY – General Health of Population. Accessed: March 2025. Available from: https://data.cso.ie/

Activity	Participation (%)	
	Republic of Ireland*	South-West
Cycle to get to and from places (2019)	12	10
Do sports, fitness or recreational physical activities (2019)	49	47
Do muscle-strengthening activities (2019)	25	24

5.9.4 Tourism and Recreation Baseline Condition

Cork 2050 identifies tourism as an '*essential complement to Cork's towns, villages, rural areas and islands*'[46], and parts of the study area are located within Fáilte Ireland's Ancient East and Wild Atlantic Way tourism programmes. Key tourist attractions within the study area include Cork City centre and its maritime heritage, Kinsale (including Charles Fort and harbour cruises) and Midleton Distillery. Garryvoe beach at Shanagarry and Myrtleville Beach and White Bay Beach at Cork City are popular recreational resources for the local community as well as a tourist attraction.

Other water-based recreational activities and tourist attractions include boat hire in Cork Harbour, dolphin and whale watching (based outside the hydrometric modelling area but potentially using coastal waters within the study area, kayaking, stand up paddleboarding, sailing, powerboating, water skiing and river angling (see Section 5.9.5) . One national waymarked trail, The Atlantic Coast Cycle Route, passes through the south southeastern portion of the study area. National waymarked trails located in the study area are shown in Figure 5-12, and the locations of designated Bathing Water areas are shown in Figure 5-1.

Bathing Waters

Bathing water quality has remained of very high quality in Ireland, over the past 25 years. Bathing water compliance changed from 98.5% in 1998 to 97% in 2023 respectively 96% in 2024. The Bathing Water Quality in Ireland Report for 2024[47] shows that the water quality at most of Ireland's bathing waters met or exceeded the appropriate standards: 81% of bathing sites had 'excellent' water quality in 2024. The number of designated bathing areas has slightly increased also, from 147 in 2019 to 148 in 2023 and 151 in 2024.

According to Bathing Water Quality in Ireland Report for 2024, two bathing waters were poor (down from 5 in 2023). Urban waste water was most frequently reported as the likely cause of incidents in 2024. Other reported causes included agricultural runoff, contamination from animals/birds and pollution entering the surface water collection system through misconnections or runoff from urban areas. Heavy rainfall can result in wastewater overflows and in runoff from agricultural lands and urban areas, which can cause short-term deterioration in water quality.

For the Cork County, from the 14 bathing waters, the following 11 were identified as "excellent" quality in 2023 and 2024: Barley Cove, Fountainstown, Garretstown, Garrylucas-White Strand, Inchydoney East Beach, Inchydoney West Beach, Owenahincha-Little Island Strand, Redbarn, Tragumna, Youghal Claycastle and Youghal-Front Strand Beach. Fountainstown is located within the project area and the closest other bathing waters to the project area, at more than 15 km from it, are: Garretstown, Garrylucas-White Strand, Redbarn, Youghal Claycastle and Youghal-Front Strand Beach.

There is one designated Bathing Water area within the hydrometric modelling area. Fountainstown Beach located in the Outer Cork Harbour (Figure 5-1) is classified as having excellent water quality and has been awarded both a Blue Flag award and the Green Coast Award in 2023.

[46] Cork County Council. 2017. Cork 2050 Realising the full potential. Cork's submission to the National Planning Framework. Accessed: March 2025. Available from: https://www.corkcoco.ie/sites/default/files/2022-03/cork-2050-main-report-pdf.pdf

[47] Environmental Protection Agency, Ireland. Bathing Water Quality in Ireland 2024. Accessed: May 2025. Available from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/bathing-water-quality-in-ireland-in-2024.php

An Taisce announce Blue Flag and Green Coast Awards 2025 with 169 awards being presented. Cork has the highest number of Green Coast Awards (14) and a combined total of 27 awards, including Blue Flags for Kinsale Yacht Club and The Royal Cork Yacht Club (Marinas). Within the project area are The Royal Cork Yacht Club (Blue Flag Marina) on Owenabue River, Crosshaven Village and Fountainstown beach (Blue Flag and Green Coast Beach), on the South Cork Coast, west of the entrance to Cork Harbour and on the northern side of Ringabella Bay.

5.9.5 Commercial and Recreational Fishing Baseline Condition

Fish stocks in Irish waters (excluding the Inshore stocks) are managed by the EU under the CFP. Inland Fisheries Ireland (IFI) is the Agency that has the statutory responsibility for the protection, development, and management of rivers and streams, lakes and coastal waters (within a 12-mile jurisdictional limit) and including fisheries and sea angling resources[48].

Fresh water fishing

Fresh water fishing in Ireland is represented by mainly recreational fishing. The main types of recreational fishing in Ireland are trout, pike, salmon and coarse fishing.

IFI[48] note that brown trout thrive in most waters and as such are widespread across most of Ireland. In many areas fisheries are specifically managed for brown trout; however, they are also found in waters containing large stocks of pike and coarse fish. The Atlantic Salmon ("Bradán" in Gaelic) is a native Irish fish. Most rivers have a run of salmon from Spring until Autumn. Salmon can be caught in Irish waters from January through to October. There are five river water bodies that are designated as salmonid rivers (under Salmonid Regulations (S.I. 293 / 1988)) but are not located within SACs. Two of these water bodies (Lee (Cork)_020 and Lee (Cork)_090) have been prioritised for action as the water conservation objectives for this species are not being supported by ecological status[49]. The River Lee main channel from source to Cork City waterworks at Lee Road is a designated salmonid fishery under the EC (Quality of Salmonid Waters) Regulations of 1988 (SI 84 of 1988), implementing the Freshwater Fish Directive (78/659/EEC). The Lee is also known to contain populations of Brown trout (*Salmo trutta*), Lamprey (*Lampetra sp. And Petromyzon* sp.) and European eel (*Anguilla anguilla*)[50].

Coarse fishing in Ireland is a year-round activity. According to the IFI[48] fish feeding throughout the year, particularly roach and perch, can be fished all year round. Species such as tench, bream and rudd, which are most active in warmer weather, have a natural season extending from April to October. Most Irish rivers and loughs are subject to seasonal rhythms of high and low water and can be adversely affected by floods and droughts and fisheries are also affected by climate change and water pollution.

Marine Fisheries

Data from Ireland's Marine Atlas [62] shows that inshore fishing activities undertaken within the study area include periwinkle harvesting and pot fishing. Fish species whose range includes the hydrometric modelling area include blue whiting, Atlantic cod, haddock, herring, horse mackerel, mackerel, megrim, whiting and wild Atlantic salmon.

[48] Inland Fisheries Ireland. 2023. Inland Fisheries Ireland. Accessed: March 2025. Available from: https://www.fisheriesireland.ie/#:~:text=Inland%20Fisheries%20Ireland%20is%20the,jurisdictional%20limit%20is%20also%20included.

[49] EPA Catchments. 2018. Lee-Cork Harbour Catchment Assessment 2010-2015 (HA 19). Accessed: July 2025. Available from: https://www.catchments.ie/wp-content/files/catchmentassessments/19%20Lee,%20Cork%20Harbour%20and%20Youghal%20Bay%20Catchment%20Summary%20WFD%20Cycle%202.pdf

[50] Flood Info (2015). Lower Lee (Cork City) Drainage Scheme. Accessed: April 2025. Available from: https://www.floodinfo.ie/frs/media/filer_public/b8/a6/b8a6adbd-82b1-473b-99ff-5711c1f7fa48/chapter-5_flora-and-fauna.pdf

Fish landings at Cork and Cobh ports were 3,605 tonnes and 55 tonnes respectively in 2023, with the landings for Cork increasing from 2,463 tonnes in 2022 and the landings for Cobh decreasing from 108 tonnes in 2022[51].

Shellfish Waters

There are four shellfish waters in the study area, Cork Great Island North Channel, Rostellan North, Rostellan South, Rostellan West and Ballymacoda Bay, which are protected areas designated to support oysters. Shellfish Water Protected Areas now come under the protected areas covered under the WFD. Inadequately treated wastewater discharges have potential to contaminate shellfish with bacteria and viruses which in turn poses risk to human health through the consumption of the shellfish. Between 2009 and 2015, Cork North Channel frequently failed to meet the guide value[49.]

The EPA has identified that Uisce Éireann must complete an assessment of the impacts of wastewater discharges at all four locations within the study area. Uisce Éireann have completed the detailed assessment of discharges to Cork Great Island North Channel, Rostellan South, Rostellan South and Rostellan West using modelling studies (as reported in the Intertek Carrigrennan WwTP Water Quality Modelling Study May 2024)

Aquaculture

The European Commission (EC, 2021) set out its strategy to develop the potential of aquaculture as a source of food in a sustainable manner in line with the European Green Deal. The National Strategic Plan for Sustainable Aquaculture Development 2030 was issued in October 2023 (DAFM, 2023). This aims to sustainably grow the aquaculture sector while ensuring the environmental protection of marine ecosystems and minimising the sector's carbon footprint. The growth of the aquaculture sector must be considered in relation to its impact on marine environmental status under the WFD and MSFD and also on the qualifying interests of protected sites under the Habitats and Birds Directives.[22]

In Cork County, within the project area there are two Licensed Aquaculture Sites, T05-522B(68.41ha) for Blue Mussel and T05-294A(7.86 ha) for Pacific Oyster and Brown Seaweeds, and two Fishery Orders-Licensed Aquaculture Sites, T05-002OFO(928.80ha) for Blue Mussel and T05-017OFO(129.14 ha) for European Flat Oyster, presented in Figure 5-4, with the following characteristics[52]:

- T05-522B intersects T05-002OFO and both are intersecting Cork Harbour SPA, Rostellan South, Rostellan North and Rostellan West Shellfish Waters and Cork Harbour Ramsar site.
- T05-294A and T05-017OFO are intersecting Great Island Channel SAC, Cork Harbour SPA and Cork Great Island North Channel Shellfish Waters.

5.9.6 Future Trends

The CMA is a major regional metropolitan area, identified as such in the NPF 2040[1] and in the Southern RSES 2020-2032[2] to ensure long term economic, environmental, and social progress. The NPF 2040 envisages that Cork will become the fastest-growing city region in Ireland with a projected 50% to 60% increase of its population in the period up to 2040.

Proposed new infrastructure projects within the study area include:

- N/M20 Cork to Limerick project part of the Cork Metropolitan Area Transport Strategy;
- N28 Cork to Ringaskiddy;
- Mahon to Marina Greenway;
- Runway reconstruction project at Cork Airport;

[51] Central Statistics Office (CSO). 2024. Fish Landings FLA01 2007-2023. Accessed: March 2025. Available from: Data Fish Landings 2022 - Central Statistics Office;

[52] Licensed Aquaculture Sites. 2022.DAFM. Accessed: May 2025. Available from: https://opendata.agriculture.gov.ie/dataset/https-dafm-maps-marine-ie-aquaculture-viewer

- Cork Commuter Rail Programme;
- MTU Cork Campus, refurbishment of 1974 building;
- Lower Lee (Cork City) Flood Relief Scheme (in development);
- Cork Lower Harbour Main Drainage Scheme (due for completion in 2021);
- Cork City Waste Water Network Drainage Area Plan;
- Completion of investments at Port of Cork; and
- Development of the Cork City Docklands.

Uisce Éireann is involved in Project Steering Committees/Groups for various ongoing research projects which focus on contaminants of emerging concern (CECs) and include Microplastics, Phthalates (chemicals considered to be potential endocrine disruptors), Pharmaceuticals/ Pesticides & Antimicrobial Resistance (EPA and UKWIR funded). Uisce Éireann provides asset data and facilitates sampling of wastewater influent and effluent and also raw drinking water. Uisce Éireann also participates in iNAP 2 (2021-2025) meetings, where the main objective is to increase environmental surveillance and monitoring for AMR to identify national levels and understand transmission routes.

Following the adoption of the Partnership Agreement 2021-2027 with Ireland, the European Commission has adopted the European Maritime, Fisheries and Aquaculture Fund programme for Ireland, to implement the EU CFP and EU policy priorities outlined in the European Green Deal.

The programme aims to boost the resilience of the entire seafood sector, to accelerate its green transition, as well as to support the coastal communities[53]. 50% of the programme allocation will be dedicated to sustainable fisheries and conservation of aquatic biological resources, 36% will be invested in sustainable aquaculture and in processing and marketing, 6% will be dedicated to sustainable blue economy in coastal areas and 2% will be invested in the strengthening of international ocean governance.

5.9.7 Key Considerations for CWS and the SEA

Key challenges and opportunities in relation to Population, Economy, Tourism and Recreation, and Human Health are:

Challenges

- Population growth within the study area will increase demands on the existing wastewater infrastructure, and also alter the geographical extent of serviced lands;
- Potential for the operation of wastewater treatment plants to affect freshwater or estuarine or marine water quality, fish stock and related livelihoods or recreation and tourism opportunities.
- Potential for the operation of wastewater treatment plants to affect shellfish, related livelihoods and human health.
- Potential for construction works to affect water quality, fish stock and related livelihoods or recreation and tourism.

Opportunities

- There are opportunities to improve water quality from discharge outfalls and reduce spills from storm overflows with benefits for recreation along rivers and coastal areas. Improvements to water quality by preventing spills or reducing pollutant load in the source waters can also provide wider benefits to the environment and reduce risk to drinking water.

[53] Directorate-General for Maritime Affairs and Fisheries. 2022. Ireland will receive €142 million from the European Maritime, Fisheries and Aquaculture Fund 2021-2027. Accessed: March 2025. Available from: https://oceans-and-fisheries.ec.europa.eu/news/

5.10 Climate Change

Climate science is clear – human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels with a likely range of 0.8°C to 1.2°C. At current levels of global greenhouse gas emissions, the world remains on course to exceed the Paris Agreement's temperature thresholds of either 1.5°C or 2°C above pre-industrial levels[54].

Climate change not only means changes in the average climate such as temperature but also changes in the frequency and intensity of extreme weather and climate events[54].

The Climate Action Plan 2025[9] is the third annual update to Ireland's Climate Action Plan 2019. This Plan builds upon the 2024 Plan by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings. The Plan provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero by no later than 2050, as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021.

Reports from the Intergovernmental Panel on Climate Change reinforced the urgent need for greater action on climate adaptation globally. Observations show that Ireland's climate is changing in terms of sea level rise, increases in average temperature, changes in precipitation patterns, and weather extremes.

Climate change is expected to have diverse and wide-ranging impacts on Ireland's environment, society, and economic development, including on managed and natural ecosystems, water resources, agriculture and food security, human health, and coastal zones. The most immediate risks to Ireland from climate change are predominantly those associated with changes in extremes, such as floods, droughts, and storms.

A study by the EPA[55] found that 86% of Cork County residents were worried about climate change, with flooding (69% of residents), rising sea levels (69%) and severe storms (71%) being the risks which more Cork County residents are more concerned about than the Ireland average. The risk which was of most concern, both across Ireland and for Cork County residents, was water pollution.

5.10.1 Climate Change Baseline Condition

Observations show that Ireland's climate is changing in terms of sea level rise, increases in average temperature, changes in precipitation patterns, and weather extremes. This pattern is replicated within the study area, as summarised in the following subsections.

Temperature Trend

The Cork County Council Climate Action Plan 2024-2029[56] identified that 2022 was *'the warmest year on record'* for Ireland based on annual average temperatures, and four of the hottest summers recorded were in the last 10 years.

Impacts associated with heatwaves recorded within Cork County over the last 10 years include[56]:

- High temperature and drought conditions; 30.1°C recorded at Moore Park; Driest summer on record in 56 years (July 2018);
- Red Flags raised at beaches across the county due to appearance of an invasive species, Portuguese man o' war, the stings of which can be fatal (August 2021);
- Deformation of road surfaces across the County (August 2022);

[54] Environmental Protection Agency (EPA). 2023. Land Use Review: Fluxes, Scenarios and Capacity Synthesis Report. Accessed: March 2025. Available from: https://www.epa.ie/publications/research/evidence-synthesis-reports/evidence-synthesis-report

[55] Environmental Protection Agency (EPA). 2021. Climate Change in the Irish Mind (CCIM). Accessed: March 2025. Available from: https://www.epa.ie/publications/monitoring--assessment/climate-change/climate-change-in-the-irish-mind.php

[56] Cork County Council. 2024. Cork County Council Climate Action Plan 2024-2029. Accessed: March 2025. Available from: cork-county-council-climate-action-plan-2024-2029.pdf

The frequency of identified severe weather events in Cork County, between 1985-2022, was of 3% for drought (once in a 10 to 100 years period) and 13% for heatwaves (once in a 2 to 10 years).

In December 2010 temperatures of -7.2°C recorded were recorded in Cork County, leading to widespread closure of business and significant damage to water and energy networks and infrastructure[40,56].

Precipitation and Storms

The number of days with high rainfall has increased in the study area over the last 30 years, with average annual rainfall at Cork Airport increasing by 3% for the most recent period (1981-2010) compared to the 1961-1990 baseline. In addition, extreme rainfall events have been recorded, including the 230mm of rain that fell in one day during the 2020 Rosscarbery flood, which was the highest recorded daily volume since 1961[40,56].

The main impacts of heavy rainfall and storms in Cork County in the last ten years have included[40,56]:

- Storm force winds that caused coastal flooding of Bantry town square (Storm Eleanor – January 2018);
- Disruption to transport network; deep drifting of snow on roads caused cars to be abandoned. 15 cm of snow recorded at Cork Airport with minimum temperature of -7ºC on March 1st (Storm Emma and Beast from the East – March 2018);
- Peak sustained wind speed of 91 km/h on Sherkin Island; Roads closed due to fallen trees and other debris; Flights cancelled at Airport (Storm Atiyah – December 2019);
- Dangerous roads, with debris and surface flood water along with a risk of falling trees (Storm Francis – August 2020);
- Lost power for 40,000 premises, in Cork, including Schull, Bantry, Skibbereen, Clonakilty, Dunmanway; Damaged boats and facilities at the new Cobh Marina in Cork Harbour (Storm Ellen – August 2020);
- 230 mm of rain fell during the 2020 Rosscarbery flood (highest recorded since 1961); Damages to roads and property (Rosscabery Flood – August 2020);
- 15 properties in Bantry flooded; the closure of part of the main N71 and serious damage to road surfaces (Rainfall – October 2020);
- Tidal flooding of 23 premises in Bantry; over 3,000 power outages, disruption to water supply affected several hundred homes (Storm Barra – December 2021); and
- Approximately 17 council offices and amenity sites closed due to storm risks; approximately 22 incidents of fallen trees and road disruption; highest gust observed at Roches Point, Co. Cork at 137 km/h (74 kt) (Storm Eunice – February 2022).

The frequency of heavy precipitation and storm events identified in Cork County between 1985 and 2022 was of once in a 1 to 2 year period for severe windstorms and a 1 in 10 to 100 year period for heavy snowfall, cold spell and pluvial flooding.

Sea Level Rise

The rate of global sea level rise for 2006–2015 of 3.6 mm per year, is unprecedented over the last century, and about 2.5 times the rate for 1901–1990. Sea level is projected to continue to rise at this rate or greater, and would result in coastal erosion, flooding and damage to property and infrastructure. Sea levels in the Cork Harbour area have risen by 40 cm since 1942[56].

Marine environment

The Climate Action Plan 2024[9] states that climate change is causing fundamental and potentially irreversible changes to our marine environment, with effects for all society. Global ocean warming and ocean acidification may result in direct consequences for our marine ecosystems. At the same time, the intensity of storm events has increased, threatening coastal communities and infrastructure. These threats put at risk the many

benefits provided by our seas, including food, energy, minerals, climate regulation, coastal protection, transport, leisure, and health and well-being.

Across the marine sector, a number of actions have been progressed under the Climate Action Plan 2021, including identifying areas of climate action appropriate to the Seafood Development Programme 2021-27, and completing the National Strategic Plan for Sustainable Aquaculture.

The Climate Action Plan 2024[9] notes that significant developments are currently under way in the planning and consenting regime for the marine environment to support the ambitions for decarbonising the energy sector through the development of offshore renewable energy. This will facilitate the development of offshore renewable energy to progress at pace alongside the conservation, protection, and recovery of marine biodiversity.

5.10.2 Future Trends

Climate change is expected to have diverse and wide-ranging impacts on Ireland's environment, society, and economic development, including on managed and natural ecosystems, water resources, agriculture and food security, human health, and coastal zones. The most immediate risks to Ireland from climate change are predominantly those associated with changes in extremes, such as floods, droughts, and storms[54].

The first NAF identified that the role of Local Authorities is critical in building climate resilience and every Local Authority is required to develop a Climate Action Plan under the Climate Action and Low Carbon Development (Amendment) Act 2021; covering mitigation, adaptation, and citizen engagement.

The Climate Action Plan for Cork County[56] identifies that:

- Summer rainfall is expected to reduce by between 5 and 15% in the future when compared with the baseline period of 1981 to 2000, contributing to potential drought conditions;
- As a consequence of the increasing temperatures, a decrease in the number of frost days, ice days, and snowfall in the 2041-2060 future period when compared with the baseline period of 1981 to 2000, is predicted;
- The annual snowfall in the region is projected to decrease substantially by the middle of the century;
- Projections indicate an increase in the frequency of heavy rainfall days (days with precipitation >30mm) for Cork County with some areas projected to see increase of up to 52%. This will likely result in an increased frequency of associated fluvial and pluvial flooding.
- Rising sea levels projections under a high emissions scenario indicate an increase of up to 0.26 m by 2050;
- By mid-century, projections indicate that average wind speed will remain similar to those currently experienced but an increase in more intense storms which are currently rare events is projected; and
- Projections of changes in groundwater flooding are not currently available.
- The key climate risks identified for the study area are as follows:
- Increased risk of flooding (groundwater, pluvial (surface water) and fluvial (river)) associated with increased precipitation driving higher river flows, increased frequency of extreme precipitation events.
- Increased risk of coastal flooding and coastal erosion associated with sea level rise and increased wave heights in the north east Atlantic.
- Increased average surface air temperatures and number of warm days, leading to heat waves, drought and thunderstorms.
- Increased windspeeds in winter and increased intensity of extreme wind storms, leading to high winds and wind storms.

The revised and updated National Adaptation Framework (NAF) 2024[10] reflects the increasingly important role of adaptation in addressing climate change impacts. The revised NAF also underpins the development of a new cycle of Sectoral Adaptation Plans. The revised NAF 2024 identified 12 key sectors that would require Sectoral Adaptation Plans grouped under four themes: Natural and Cultural Capital, Critical Infrastructure, Water Resource and Flood Risk Management (with Flood Risk Management, Water Quality, and Water Services Infrastructure sector levels), and Public Health.

5.10.3 Key Considerations for CWS and the SEA

Key challenges and opportunities related to climate change mitigation and adaptation are set out below.

Challenges

The European Climate Law writes into law the goal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

Climate neutrality by 2050 means achieving net zero greenhouse gas emissions for EU countries as a whole, mainly by cutting emissions, investing in green technologies and protecting the natural environment.

Changes in climate have direct and indirect influence on Uisce Éireann and the services it provides, and the changing climate will affect Uisce Éireann in many ways. Changes are already being felt and are expected to continue over the period to 2050 and beyond, and these include:

- Higher temperatures will impact receiving waters (rivers and the sea), potentially requiring new wastewater treatment practices. New treatment technologies for clean water may also be needed;
- More frequent extreme weather events and higher rainfall intensity can increase flood events and soil erosion with impacts on water quality from sediment and nutrients;
- Higher temperatures can increase vulnerability of aquatic ecosystems to pollution;
- Existing physical assets will need to manage additional rainfall and higher temperatures. They may be subject to increased fluvial and coastal flood and erosion risk; and
- Regulatory and policy commitments and compliance requirements on carbon emission targets and improving climate change resilience will have implications on operations and projects.

Opportunities:

- Opportunities to achieve wider environmental benefits, infrastructure and service resilience and cost efficiency alongside contributing to meeting climate targets.

5.11 Biodiversity, Flora and Fauna

Biodiversity in Ireland is facing ongoing pressures which has the potential to cause further deterioration to the condition status of habitats and species.

Global trends of biodiversity loss are reflected in Ireland. According to Ireland's 4th National Biodiversity Action Plan[14], the main drivers of biodiversity loss are intensive agricultural and forestry practices, overfishing, invasive species, changes in land use (particularly for residential, agricultural and commercial development) and the over-exploitation of resources such as peatland loss.

The 2025 conservation status assessment[57] updates the 2019 assessment and reported that 90% of Irish habitats listed in the Habitats Directive are currently in Unfavourable status, with over half showing continued decline. Agricultural pressures remain widespread. While alien invasive species are commonly reported, they vary according to habitat type, with Common Cordgrass (Spartina anglica) recorded in salt marsh habitats, and Himalayan Balsam (Impatiens glandulifera) in wetlands. Pollution, and specifically nutrient enrichment,

[57] National Parks & Wildlife Centre (NPWC). 2025. The Status of EU Protected Habitats and Species in Ireland. Accessed 12.01.2026 Available from https://www.npws.ie/publications/article-17-reports/article-17-reports-2025

affects freshwater and marine habitats, while hydrological impacts are common in wetland habitats. While impacts on condition are more widespread, ongoing losses are significant in grassland and fen habitats. there The species status assessments are reported as generally faring better, with 58% in Favourable status, including most of the bat species, seals, and cetaceans. A declining trend is reported for 18% of species, with freshwater species most at risk, particularly from pollution.

The latest (2023)[58] report on water quality indicates that nutrient concentrations and biological quality in rivers and lakes remained largely unchanged. The proportion of rivers in satisfactory biological condition has not improved since 2018. Of the river water bodies assessed in 2022 and 2023, many remained stable, but there was a net decline in quality in some areas. High-quality river sites have remained relatively stable since 2010-2012, with an increase in the highest quality sites supporting sensitive aquatic species (salmon, trout and pearl mussel)[57]. There was a slight decline in the proportion of lakes with high biological quality, particularly in the northwest and southwest regions. Over half of monitored lakes are in high or good biological quality, but some lakes, especially in the Erne and Shannon catchments, are failing to achieve good quality due to elevated phosphorus levels.

5.11.1 Biodiversity, Flora and Fauna Baseline Condition

Protected areas

The Habitats Directive seeks to ensure the appropriate conservation of natural habitats and of wild fauna and flora. The Habitats Directive (92/43/EEC) was transposed into Irish law in 1997 by the EC (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997). The Regulations were subsequently revised and consolidated in the EC (Birds and Natural Habitats) Regulations 2011, as amended (S.I. No. 477 of 2011). Under the Directive, Ireland, like other member states, was required to establish an ecological network of Special Areas of Conservation – SACs (sites which host a range of natural habitats and species listed in Annex I and II of the Directive). The Birds Directive (2009/147/EC) ensures the appropriate protection of SPAs (sites which are classified for rare and vulnerable birds listed in Annex I of the Directive). There are no UNESCO Biospehere Reserve sites within the study area[59].

There are 30 protected areas covering a total of 85 km^2 of the hydrometric modelling area. Protected areas include one SPA (Birds Directive); one SAC (Habitats Directive); 27 pNHAs; and one Ramsar site[60]. Additionally, two SACs and seven SPAs outside of the hydrometric modelling area were screened in as within the zone of influence for the AA screening. Designated sites within the study area are listed in Table 5.14 and shown in Figure 5-6.

Table 5.14 Designated sites within the hydrometric modelling area and European Sites within the zone of influence for the AA screening based on pathways for effects on qualifying features.

Designation Type	Designated Site	Total site area (km^2)	Area within the hydrometric modelling area (km^2)
Proposed Natural Heritage Area	Ardamadane Wood	0.22	0.22
	Ballincollig Cave	0.03	0.03
	Ballycotton Islands	0.97	0.07

[58] Environmental Protection Agency (EPA). 2023. Water Quality in 2023: An Indicators Report. Accessed: March 2025. Available from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/water-quality-in-2023.php

[59] UNESCO. 2025. UNESCO Biospheres in Ireland. Accessed: March 2025. Available from: https://www.ireland.ie/en/oecd-unesco/paris/ireland-and-unesco/biospheres/

[60] National Parks & Wildlife Service (NPWS). 2023. Protected Sites in Ireland. Accessed: March 2025. Available from: https://www.npws.ie/protected-sites

Designation Type	Designated Site	Total site area (km^2)	Area within the hydrometric modelling area (km^2)
	Ballynaclashy House, North Of Midleton	0.002	0.002
	Blarney Bog	0.73	0.73
	Blarney Castle Woods	0.14	0.14
	Blarney Lake	0.18	0.18
	Carrigshane Hill	0.06	0.06
	Cork Lough	0.08	0.08
	Cuskinny Marsh	0.14	0.14
	Douglas River Estuary	3.99	3.99
	Dunkettle Shore	0.36	0.36
	Fountainstown Swamp	0.06	0.06
	Glanmire Wood	0.12	0.12
	Great Island Channel	14.81	14.81
	Leamlara Wood	0.14	0.14
	Lee Valley	0.73	0.73
	Lough Beg (Cork)	1.78	1.78
	Loughs Aderry And Ballybutler	0.55	0.34
	Minane Bridge Marsh	0.25	0.08
	Monkstown Creek	0.72	0.72
	Owenboy River	1.34	1.34
	Rockfarm Quarry, Little Island	0.24	0.24
	Rostellan Lough, Aghada Shore And Poulnabibe Inlet	1.61	1.61
	Shournagh Valley	0.74	0.74
	Templebreedy National School, Crosshaven	0.0002	0.0002
	Whitegate Bay	1.36	1.36
Ramsar	Cork Harbour	14.27	14.27
Special Area of Conservation	Ballymacoda (Clonpriest and Pillmore) SAC*	4.95	4.95
	Great Island Channel SAC	14.38	14.38
	The Gearagh SAC*	5.54	5.54
	Ballycotton Bay SPA*	2.81	2.81

Designation Type	Designated Site	Total site area (km²)	Area within the hydrometric modelling area (km²)
Special Protection Area	Ballymacoda Bay SPA*	5.86	5.86
	Blackwater Callows SPA*	10.37	10.37
	Blackwater Estuary SPA*	8.69	8.69
	Cork Harbour SPA	26.77	26.77
	Courtmacsherry Bay SPA*	12.99	11.91
	Sovereign Islands SPA*	0.29	0.29
	The Gearagh SPA*	3.23	3.23

* Sites screened in as within the zone of influence for the AA screening but outside of the hydrometric modelling area.

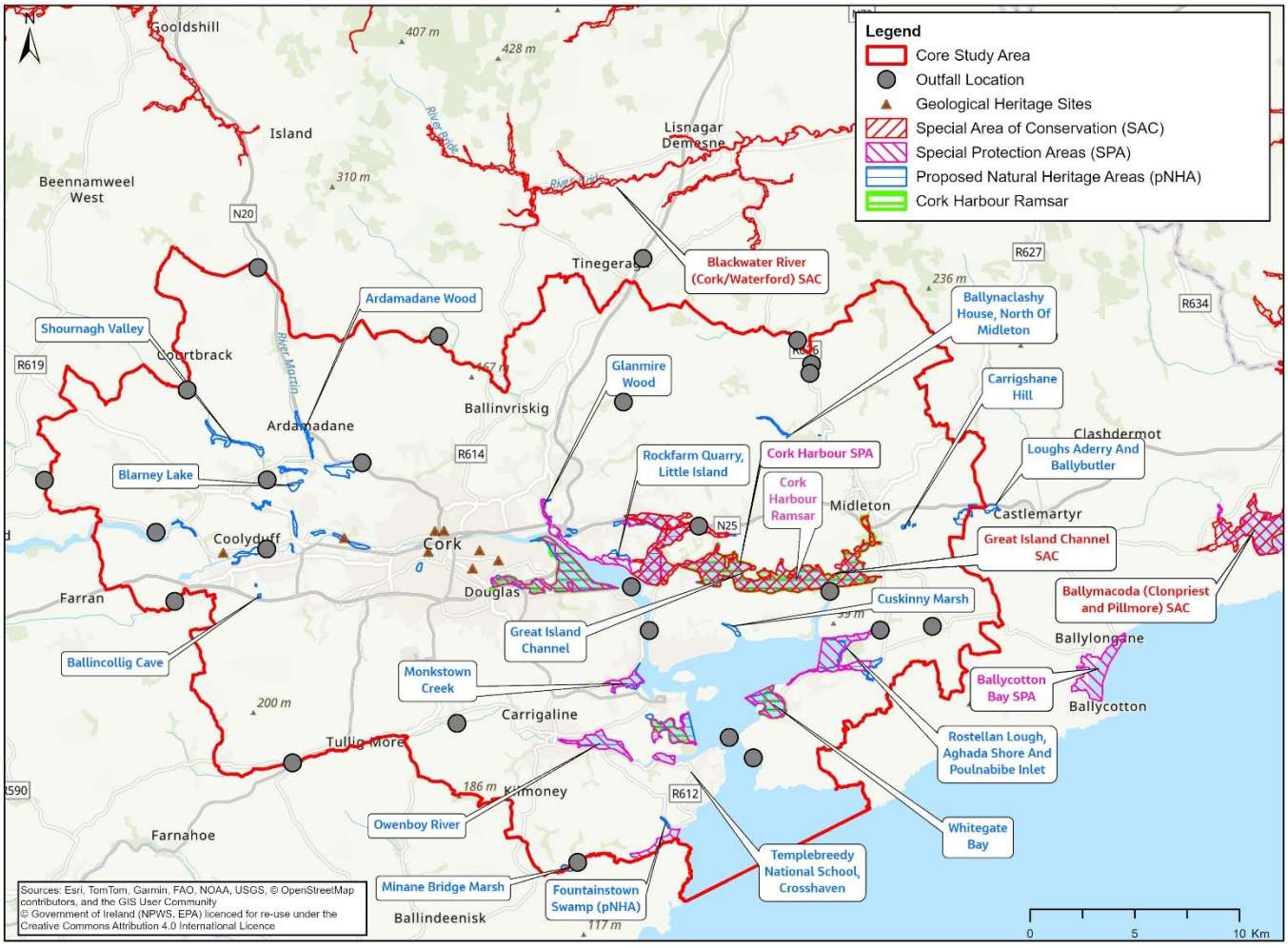

Figure 5-6 European and national protected biodiversity sites, natural heritage and geological designated sites[61]

Habitats and Species Conservation Status

The status of protected species and habitats in Ireland is monitored by the National Parks and Wildlife Service (NPWS). Conservation status is assessed at a national level and the assessment takes into account the status of the range, area, structure and functions as well as future prospects of each species and habitat before defining an overall status for each.

Only 8% of protected habitats in County Cork have favourable overall conservation status (Figure 5-8), with only 8 % of habitats showing improving status trend. 31% of habitats had a stable and 58% declining status trend[14,57].

Within the study area, Carrigtwohill WwTP discharge is located within mudflats and upstream of Atlantic Salt Meadows which are an EU Protected Habitat with inadequate status and declining trend. Additionally, Saleen WwTP discharge is located 80 m upstream of mudflat and salt marsh habitats (Figure 5-7).

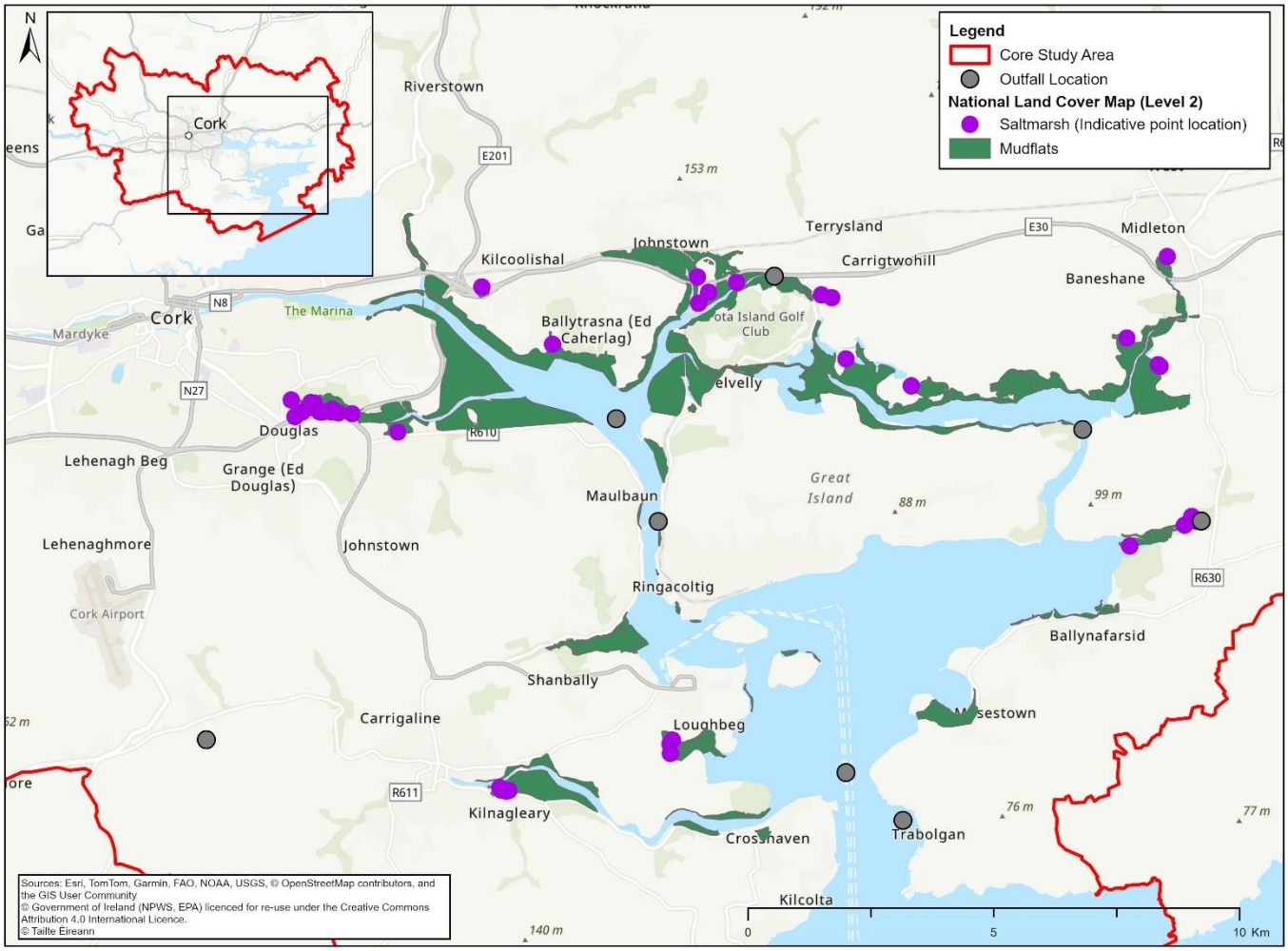

Figure 5-7 Mudflat and saltmarsh habitats within the study area

The fourth Irish report [57] on the status of the habitats and species that are protected under the EU Habitats Directive updates the 2019 report and highlights that although significant progress has been made, challenges remain. The report states that some habitats, particularly lake and coastal marine habitats, continue to suffer from nutrient pollution, and recovery may take years. Additionally, measures implemented

[61] National Parks & Wildlife Service (NPWS). 2015 and 2024. Special Area of Conservation (SAC), Special Protection Area (SPA) and proposed Natural Heritage Area (pNHA). Accessed: June 2025. Available from: https://www.npws.ie/maps-and-data/designated-site-data/download-boundary-data

in some areas have yet to show detectable improvements, and in some cases, declines elsewhere have offset gains. The effects of climate change will present additional challenges, particularly for peatland habitats and aquatic species. Ireland is committed to scaling up conservation efforts in the next 6-year period, including by developing a Nature Restoration Plan by 2026. This plan will aim to halt and reverse the decline of Annex I habitats, with the EU's Nature Restoration Regulation setting legally binding restoration targets.

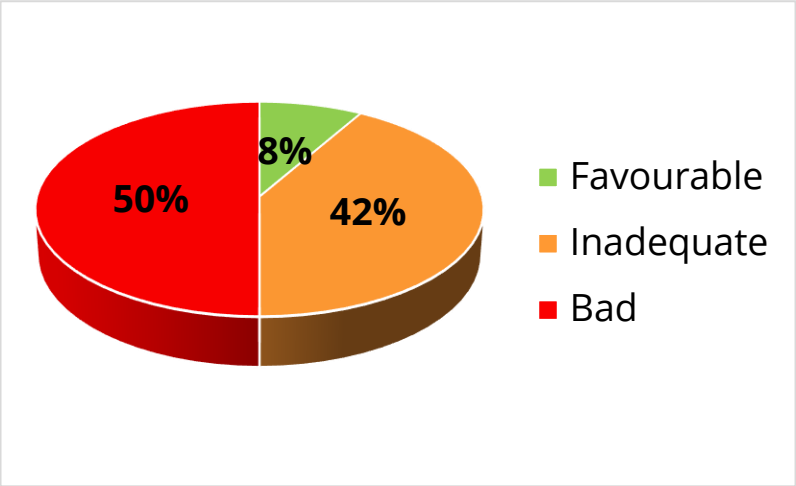

Figure 5-8 Status of Habitats in County Cork in 2025

The assessment indicates 53% of protected species in County Cork have favourable overall conservation status (Figure 5-9), with 15% of species showing improving; 47% stable and 13% declining status trend[56].

Nationally, pressures and threats are identified as impacting all 44 taxa (taxonomic groups) assessed.. Agriculture, impacts approximately 34% of species by combined High and Medium-importance pressure or threat. Human-induced changes in water regimes which includes abstractions, landfill and modification of water flow impacts approximately 15% of species by combined High and Medium-importance pressure or threat[57].

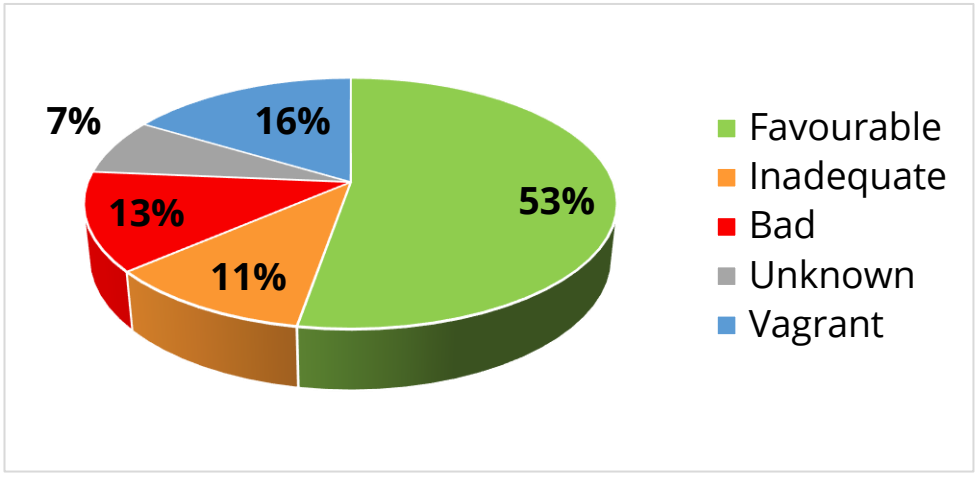

Figure 5-9 Status of Species in County Cork in 2035

Aquatic Habitats (including Freshwater, Coastal and Marine)

Aquatic biodiversity encompasses freshwater ecosystems including lakes, ponds, reservoirs, rivers, streams, groundwater, wetlands, coastal and marine. Aquatic species are dependent on clean water and suitable flows; macro-invertebrates and some species of fish, such as Atlantic salmon, are therefore good indicators of the condition of the overall water environment.

The NPWS has identified 44 different water dependent habitat types and 22 water dependent species in Ireland. Of these, the freshwater pearl mussel, is considered to be a highly sensitive surface water dependent

species in Ireland. Cork Harbour SPA includes water dependent habitats (marine community types, tidal mudflats and sandflats) which are included in the WFD Register of Protected Areas (RPAs).

Coast and Marine Environment

In Ireland, the Habitats Regulations, is currently the only legislative instrument providing protection to habitats in the marine environment. For habitats, this protection regime is applicable within the Exclusive Economic Zone. There are no marine SACs within the hydrometric modelling area.

A review of Ireland's Marine Atlas data[62] shows that coastal and marine species whose range is known to cover the hydrometric modelling area include:

- Bottlenose Dolphin, Common Dolphin, Risso Dolphin
- Leatherback turtle;
- Harbour porpoise;
- Fin whale;
- Humpback whale;
- Killer whale; and
- Minke whale.

Invasive Species

With increased globalization there is an increase in the movement of non-native species around the world and numerous non-native species, many introduced only in the last 200 years, have become successfully established over large areas of Europe[63]. Research by the European Commission funded DAISIE project, showed that non-native species are invading Europe at an unprecedented rate. 10,822 non-native species are listed for Europe of which 10-15% are expected to have a negative economic or ecological impact[64]. This is demonstrated by trend analysis of non-native species introductions for Ireland where 13% of the species recorded and assessed in Ireland are high impact invasive species[65]. The study assessed 377 non-native species; of these, 21% occur in freshwater environments. The trend analyses also showed that four times as many species were recorded in the 20th Century as in the previous one with the trend of introductions increasing dramatically from 2001 to 2010 for high impact invasive species. Freshwater environment showed the greatest rate of invasive species increase since 1980.

In addition to the objective to halt biodiversity loss, Ireland has a responsibility to prevent the spread of invasive species. An invasive species is a non-native species which has a tendency to spread to an extent determined to cause damage to the environment, the economy or human health in the country into which it has been introduced. Invasive species can dominate and marginalise native species, lowering the value of the overall ecosystem. Invasive species (including aquatic species) in Ireland are controlled under regulations 49 and 50 of the Habitats Regulations. The 'Third Schedule' of the regulations provides an extensive list of the non-native species subject to those restrictions. The below list includes invasive species present within the study area:

[62] Marine Institute. 2023. Ireland's Marine Atlas. Accessed: March 2025. Available from: https://atlas.marine.ie/#?c=52.0187:-8.8248:9

[63] Hulme, P.E., Roy, D.B., Cunha, T. & Larsson, T. B. 2009. A pan-European inventory of alien species: rationale, implementation and implications for managing biological invasions. Handbook of alien species in Europe (ed DAISIE), pp. 1-14. Springer, Dordrecht.

[64] European Commission. 2008. Commission presents policy options for EU strategy on invasive species. Press release: European Commission – IP/08/1890 05/12/2008. Accessed: March 2025. Available from: http://europa.eu/rapid/press-release_IP-08-1890_en.htm

[65] O'Flynn, C., Kelly, J. and Lysaght, L. 2014. Ireland's invasive and non-native species – trends in introductions. National Biodiversity Data Centre Series No. 2. Ireland.

American mink (Mustela/Neovison vison)
Canada goose (Branta canadensis)
Common carp (Cyprinus carpio)
Coypu (Myocastor coypus)
Grey squirrel (Sciurus carolinensis)
Greylag goose (*Anser anser*)
Harlequin ladybird (*Harmonia axyridis*)
Japanese skeleton shrimp (*Caprella mutica*)
Muntac deer (Muntiacus reevesi)
Muskrat (Ondatra zibethicus)
Ruddy duck (Oxyura jamaicensis)
Stalked/leathery sea squirt (*Styela clava*)
American skunk-cabbage (*Lysichiton americanus*)
Brazilian giant-rhubarb (*Gunnera manicata*)
Cord-grasses (*Spartina spp*.)
Curly waterweed (*Lagarosiphon major*)
Giant hogweed (Heracleum mantegazzianum)
Giant knotweed (Fallopia sachalinensis)
Giant-rhubarb (Gunnera tinctoria)
Himalayan/Indian balsam (*Impatiens glandulifera*)
Himalayan knotweed (*Persicaria wallichii*)
Hottentot-fig (Carpobrotus edulis)
Japanese knotweed (*Fallopia japonica*)
Parrot's feather (Myriophyllum aquaticum)
Rhododendron (Rhododendron ponticum)
Sea-buckthorn (Hippophae rhamnoides)
Spanish bluebell (Hyacinthoides hispanica)
Three-cornered leek (*Allium triquetrum*)
Water fern (Azolla filiculoides)
Waterweeds (*Elodea spp.)*
Wireweed (Sargassum muticum

As there are likely to be a multitude of introduction pathways for very many non-native species, prioritizing those pathways that are likely to introduce most invasive species with potential to have the highest impact, is the most effective way to target limited resources to have the greatest preventative effect.

EU Regulation on Invasive Alien Species (IAS) and pathway action plans

The EU Regulation on Invasive Alien Species entered into force on 1st January 2015. This Regulation is based on the Convention of Biological Diversity's Guiding Principles of prevention, prioritization and coordination and seeks to address the problem of Invasive alien species in a comprehensive manner. The objective is to protect native biodiversity and ecosystem services, as well as to minimize and mitigate the human health or economic impacts that these species can have.

Under Article 13 (1) of the EU Regulation on IAS, Member States are required to carry out comprehensive analysis of the pathways of unintentional introduction and spread of invasive alien species and 'identify the pathways which require priority action because of the volume of species or of the potential damage caused by the species entering the Union through those pathways. By analysing the risk of each of the IAS of Union concern being introduced and spread in Ireland with the potential impact they may have, the associated pathways are ranked and prioritized. For the priority pathways, Pathway Action Plans (PAPs) are developed.

The Article 13 requirement for development of pathway action plans is in line with the international Convention on Biological Diversity Strategic Plan for Biodiversity 2011-2020, Aichi Target 9[66] and the similar European Commission's Target 5 of the EU Biodiversity Strategy to 2020 which states 'By 2020, Invasive Alien Species and their pathways are identified and prioritized, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS'.

[66] Convention on Biological Diversity. 2010. The Convention on Biological Diversity. Accessed: March 2025. Available from: https://www.cbd.int/

5.11.2 Future Trends

There are many biodiversity related challenges to address in the future. These challenges will be further exacerbated by the effects of climate change, particularly on peatland habitats and fish species. Much will depend on the identification and development of necessary conservation measures and the elaboration of mechanisms for the delivery of these measures in the next period. Operational Programmes accessing EU funding instruments will need to be used to meet the strategic national and EU objectives for biodiversity, including in Natura 2000.

Future trends will be influenced by changes/additions to existing designated sites (SACs, SPAs and NHAs) and there condition. A number of pNHAs may be reviewed and upgraded to NHAs.

Habitats and species within and outside protected sites are all potentially affected by climate change, and this can also mean that they are more vulnerable to other pressures such as from land loss, disturbance, severance and fragmentation.

Invasive species which are listed as potential threats may become established threats in the future. The continuing development of the National Biodiversity Data Centre National Invasive Species Database will aid in the documentation of the distribution of invasive species in Ireland. These reports and datasets will go towards the implementation of the recent European legislation on halting the spread of invasive species.

The challenges involved in protecting Ireland's habitats and species are now more serious than ever and need urgent action. But nature can recover under the right conditions. Implementing national biodiversity policies, such as the National Biodiversity Action Plan (NBAP), requires an increased level of collaboration and coordination across multiple sectors and the whole of society. This can also give rise to indirect co-benefits for other sectors and environmental issues such as climate change and water quality[22].

The third cycle Water Action Plan 2024 (RBMP for Ireland)[6] includes proposals for a range of measures intended to support improvements to water quality and biodiversity, addressing nutrients from agriculture, developing a new Controlled Activities for the Protection of Waters regime to address physical condition of waterbodies, a restoration programme to address past impacts of construction on or near waterbodies programme, review of Waste Water Discharge Licences, and an expansion on the Priority Areas for Action - including Areas for Restoration, Areas for Protection and Catchment Projects.

Ireland's 4th NBAP has been in development since October 2021 and was published in January 2024. The Plan sets the national biodiversity agenda for the period 2023-2027 and aims to deliver the transformative changes required to the ways in which the nature is valued and protected. Key considerations in the development of the NBAP are set out below:

- Build on the successes of previous NBAPs, while addressing shortfalls and implementation challenges;
- Expand the governance and oversight of the NBAP and develop a robust Monitoring and Evaluation Framework to track progress;
- Achieve buy-in and ownership of the NBAP across all levels of government and society;
- Embed biodiversity at the heart of climate action;
- Achieve greater coherence between biodiversity policy and other policy areas;
- Strengthen compliance and enforcement of existing legislation;
- Increase focus on addressing the root causes and drivers of biodiversity loss rather than consequences of biodiversity loss;
- Determine biodiversity priorities, allocate financial and other resources, internalise the value of nature and recognise the cost of inaction; and
- Significantly strengthen the science base and enhance data accessibility.

Cork City Heritage and Biodiversity Plan 2021– 2026[67] contains a number of actions to help promote biodiversity conservation within the Local Authority area, such as implementing commitments under the All-Ireland Pollinator Plan, controlling the spread of invasive species, developing buffer zones around designated European sites, increasing native tree, woodland and hedgerow cover on public land.

5.11.3 Key Considerations for the CWS and SEA

Key challenges and opportunities in relation to Biodiversity, Flora and Fauna:

Challenges

- Water quality impacts on aquatic habitats and species related wastewater discharges
- Barriers for species movement avoiding creating barriers and taking opportunities for removing barriers or incorporating fish/eel passes in existing barriers and for improving habitat connectivity along riparian corridors and in the wider landscape.
- Avoiding contributing to the spread of invasive species during construction or operational activities.
- Construction impacts on terrestrial and aquatic habitats.

Opportunities

- Opportunities for reducing pollution loads from wastewater discharge and ensuring sustainable abstraction.
- Opportunities to include biodiversity enhancement measures in schemes to ensure no net biodiversity loss and potentially achieve net gain and improved connectivity and this approach is part of Uisce Éireann's Biodiversity Action Plan (BAP) .
- Opportunities for multiple benefits from habitat creation/ restoration and potential to capture the value of these using natural capital and ecosystems services approaches which can support the use of nature-based solutions and catchment management approaches.
- Opportunities for contributing to improvements in water quality and resources through better wastewater treatment and potential to reduce barriers to fish migration.

5.12 Material Assets

SEA legislation includes "material assets" as a topic to be addressed in the SEA. However, it does not clearly define what this topic includes. For the purpose of this SEA environmental assessment of the draft CWS, as set out in the SEA Scoping Report, Material Assets are considered to be the natural and built assets (non-cultural assets) and resources required to enable society to function as a place to live and work, in giving them intrinsic, economic value.

5.12.1 Material Assets Baseline Condition

Material assets considered here include:

- Land use/ natural material assets resources which include agricultural land, peatlands and forestry (see also geology and soils topic).
- Built assets - include infrastructure relating to public open spaces and buildings, schools, healthcare facilities, residential and social buildings such as housing, and infrastructural networks such as electricity, gas, transport with emphasis on water supply and wastewater infrastructure and management as most relevant.
- Waste management - an aspect of resource especially with respect to sewage sludge management and an important part of the circular economy.

[67] Cork City Council. 2021. Cork City Heritage and Biodiversity Plan 2021-2026. Accessed: March 2025. Available from: https://actionforbiodiversity.ie/action-plans/cork-city-heritage-and-biodiversity-plan-2021-2026/

These assets all need to be considered in developing new wastewater services, management of wastes as resource, network improvements and infrastructure development.

5.12.2 Land Use (Natural Assets)

More than half of the land within the study area comprises grassland, saltmarsh and swamp, with the other major types of land cover being forest, woodland and scrub, cultivated land, artificial surfaces and waterbodies. (see Figure 5-10). Table 5.15 provides a detailed breakdown of land uses within the study area as per the EPA-Tailte Éireann National Land Cover 2018[68]. The National Land Cover 2018 provides further detailed habitats and land use information which will be used at the project level.

Table 5.15 Total area in hectares (ha) and percentage of national area by Level 1 group for National Land Cover 2018[68]

Category	Category total area (ha)	Category total area (%)
Artificial surfaces	8,150	9.0
Cultivated land	13,812	15.3
Exposed surfaces	3,000	3.3
Forest, woodland and scrub	12,441	13.8
Grassland, saltmarsh and swamp	45,300	50.2
Heath and bracken	50	0.1
Waterbodies	7,484	8.3

[68] Environmental Protection Agency (EPA). 2018. National Land Cover Map 2018. Accessed: March 2025. Available from: https://www.epa.ie/our-services/monitoring--assessment/assessment/mapping/national-land-cover-map/

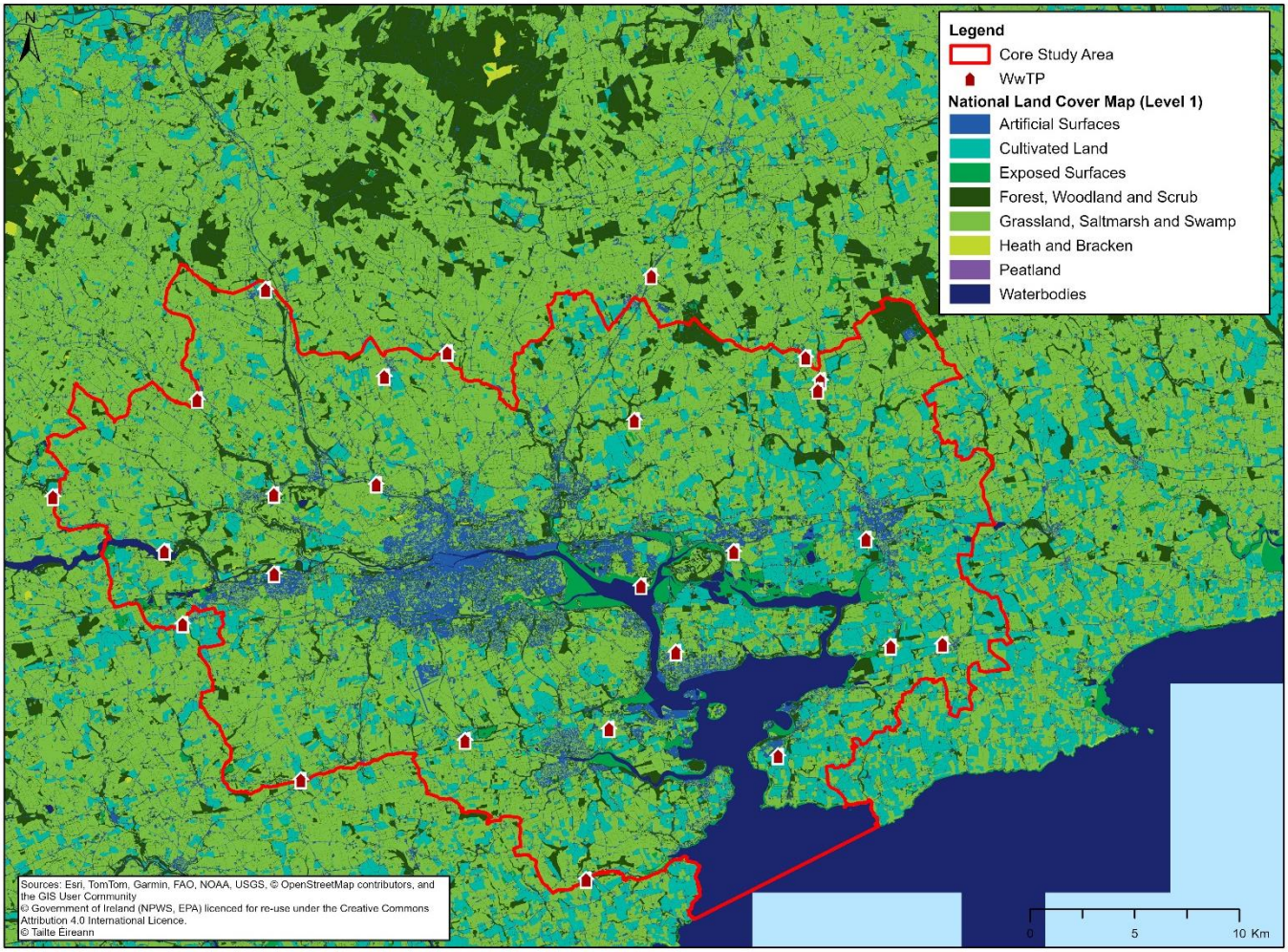

Figure 5-10 Land Use: Natural Assets[68]

5.12.3 Built Material Assets

Settlements

The key settlements within the study area are listed in Table 5.10 (see Section 5.9.1) and shown on Figure 5-11 below. Cork City is the largest settlement both in population and spatial extent, followed by Carrigwtohill, Midleton and Carrigaline.

National infrastructure

Key infrastructure within the study area is listed below and shown on Figure 5-11.

- Cork Airport located on the southern outskirts of Cork;
- IE Dublin – Cork railway line which runs in a north—south direction from the northern boundary of Cork past Blarney;
- M8 Rathcormac/Fermoy Bypass;
- Several primary roads including the N21, N22, N25, N28 and N40;
- Two fishing ports at Cobh and Crosshaven; and
- Two ferry ports at Glenbrook and Carrigaloe.

Cork Harbour is the second largest natural harbour in the world, and a key international trade gateway for Ireland. There are international shipping routes between Cork Harbour and Southampton (England), Roscoff

(France), Zeebrugg (Belgium), Rotterdam (Holland), Bremerhaven (Germany), the USA and central America and Africa[69].

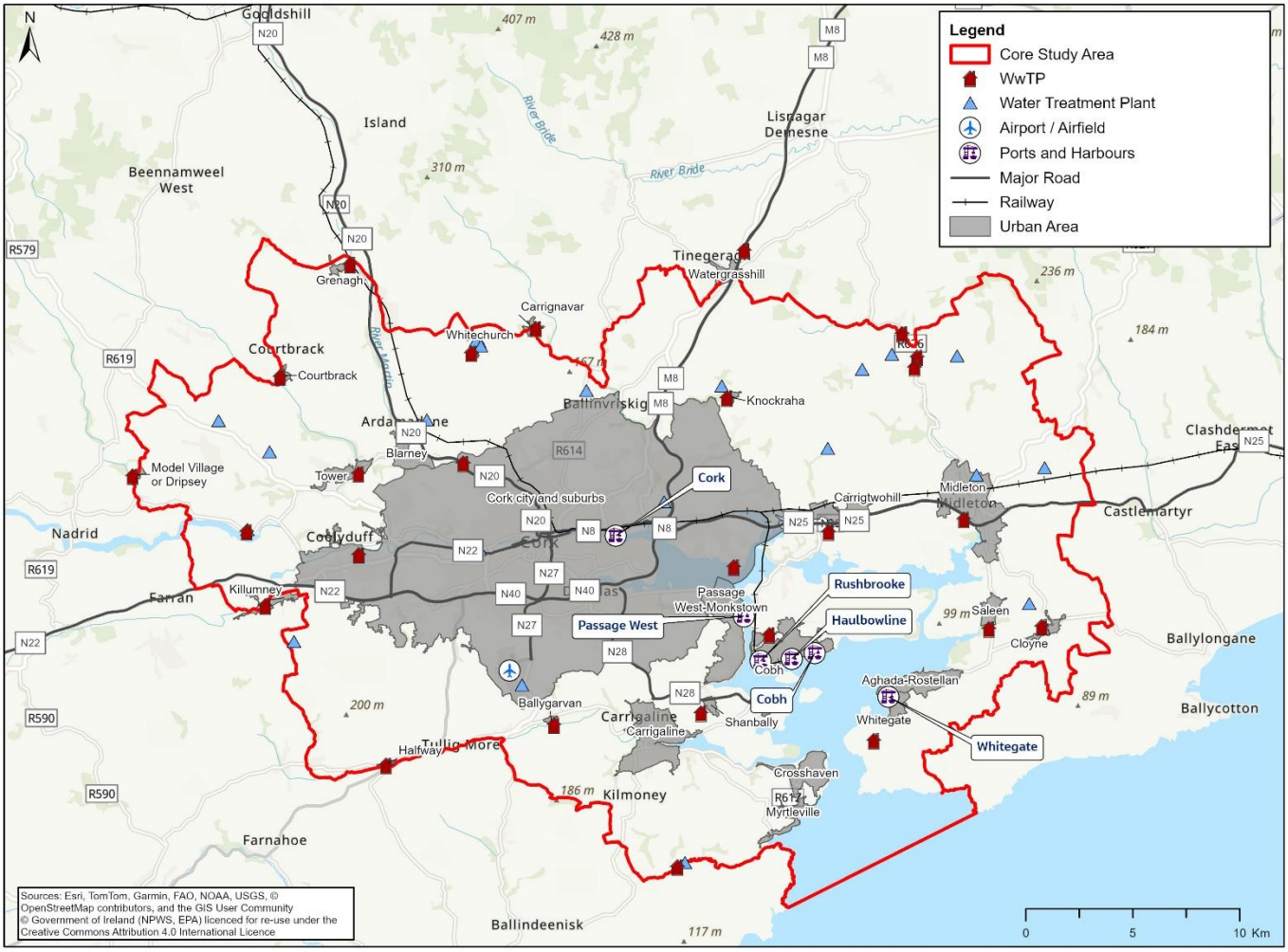

Figure 5-11 Land use - built assets

Wastewater infrastructure

The European Union's Urban Wastewater Treatment Directive (UWWTD) has been the key legislation setting the standards for treating wastewater over the last 18 years under the relevant Irish regulations. The UWWTD applied to all large urban areas (large urban areas are towns and cities with a population equivalent of at least 2,000 that discharge effluent to freshwater or estuaries, and areas with a population equivalent of at least 10,000 that discharge effluent to coastal waters), with the objective of protecting the environment from the harmful effects of wastewater discharge. The deadline for meeting these standards was 2005. The recast UWWTD adopted by the EU in November 2024 coming into force in Jnauary2025 and is required to be transposed in to Irish legislation by 31 July 2027 and the new standards and requires that this directive brings are recognised as those relevant for strategic planning for the draft CWS. These include requirements for quaternary treatment for populations with greater than 150,000 PE and for treatment plants serving populations with between 10,000 and 150,00 PE where they discharge into sensitive water bodies including bathing waters, drinking water sources and protected habitats. (See Section 4.2.1 with more detail on the recast UWWTD requirement).

There are 26 wastewater treatment plants (WWTP) in the study area, 2 of which provide primary treatment, 17 of which provide secondary treatment and 7 of which provide tertiary level treatment. The locations of WWTPs in the study area are shown in Figure 5-10.

[69] Port of Cork Company. 2023. Port of Cork Deepwater Multimodal Port. Accessed: March 2025. Available from: https://www.portofcork.ie/

Uisce Éireann estimates the improvement works in Cork area will be completed in 2035. The delays put Ireland at risk of fines for not resolving the Court's 2019 judgement.[70]

Pollution from inadequately treated wastewater can be detrimental to the survival of juvenile mussels and urgent action is needed to halt the decline of this endangered species. The EPA prosecuted Uisce Éireann in 2023 for discharging poorly treated wastewater from Boherbue, Co. Cork, in order to protect freshwater pearl mussel habitats.

Treatment at 2 large urban areas in Cork County, Cloyne and Rathcormac, failed the secondary treatment standards in the Urban Wastewater Treatment Directive in 2023.

In mid-2024, Ballycotton and Whitegate-Aghada, in Cork County, were discharging raw sewage daily because their public sewers were not connected to treatment plants.[70] Uisce Éireann had planned to eliminate raw sewage discharges from Whitegate-Aghada and Ballycotton by the second half of 2024[70].

Uisce Éireann connected Castletownshend and Inchigeelagh to treatment plants between the beginning of 2023 and mid-2024.

Collecting systems at four urban areas in Cork County must be upgraded to protect the environment and address the findings of a 2019 judgement from the Court of Justice of the European Union. For Cork City the collecting system must be upgraded by 2035; for Fermoy, this was the second half of 2024; for Midleton, by 2029; Improvements have been carried out on the collecting systems at Mallow.

In 2019 the Court also found the collecting systems at Ringaskiddy-Crosshaven-Carrigaline, Co.Cork did not meet the necessary standards. Improvement works to address the concerns raised by the Court were completed prior to 2023[70].

Wastewater treatment improvements were carried out and monitoring is ongoing to assess if these improvements have satisfactorily resolved the risks to freshwater pearl mussels at Boherbue, Castletownroche, Cecilstown, Inchigeelagh and Mallow. Uisce Éireann proposes to start upgrade works in 2029 or 2030 at Ballydesmond, Kanturk, Kealkill and Lombardstown.

Uisce Éireann must expedite the overdue assessments of the impacts of wastewater discharges on the designated shellfish waters and implement any improvements needed to mitigate impacts identified during the assessments, for Baltimore Harbour / Sherkin, Cork Great Island North Channel, Glengarriff, Oysterhaven, Rostellan North, Rostellan South, Rostellan West and Kenmare River[70].

UÉ has been investing in improving the CMA's wastewater infrastructure through new build projects and upgrades. Local critical infrastructure projects have and continue to be completed across the CMA. Critical projects and programmes to address wastewater infrastructure issues are ongoing and are not impacted or delayed by the delivery of the CWS.

A comprehensive list of recently completed and ongoing projects is provided in the draft CWS section 6, which includes network, wastewater/pumping station upgrades, maintenance works and capital works. This progress has allowed for future growth and development, reduction in asset and service risk, and the reduction of flooding and non-compliance. Upon adoption of the CWS, "Ongoing" projects will be examined in the context of the Recommended Approaches which have been identified within the Strategy.

5.12.4 Water Supply Infrastructure

There are 9 Uisce Éireann public surface water abstractions within the CWS area of which 5 are located downstream of WwTP discharges. A list of the downstream abstractions and their distance to the discharges are listed in Table 5.16 below.

There are four regulated Group Water Schemes within or close to the area:

- Farran GWS (Ovens)

[70] Environmental Protection Agency (EPA). 2024. Urban Waste Water Treatment in 2023. Accessed: March 2025. Available from: https://www.epa.ie/publications/monitoring--assessment/waste-water/urban-wastewater-treatment-in-2023.php

- Ballyglass GWS (Grenagh)
- Walterstown GWS (Cobh)
- Clonmult GWS (Dungorney)

Also a number of unregulated GWS in the area. Each GWS has an identified Zone of Contribution which has been considered as part of the baseline constraints.

Table 5.16 Distance from WwTP discharge to surface water abstractions

WwTP	Distance to surface water abstraction
Blarney	Cork City Water Supply (Abstract River Lee) – approximately **10.10 km** downstream from discharge location.
Courtbrack	Cork City Water Supply (Abstract River Lee) – approximately **17.30 km** downstream from discharge location. Discharge located upstream from Blarney discharge.
Dripsey	Zone2 Cork Harbour & City (Abstract Inniscarra lake) – more than **6.60 km** downstream from discharge location.
Inniscarra	Zone2 Cork Harbour & City (Abstract Inniscarra lake) – less than **0.5 km** from discharge location. Cork City Water Supply (Abstract River Lee) – approximately **13.70 km** downstream from discharge location.
Kileens	Cork City Water Supply (Abstract River Lee) – approximately **15.30 km** downstream from discharge location.
Carrignavar	Zone3 Glashaboy (Abstract Glashaboy River) – approximately **11.10 km** downstream from discharge location.
Grenagh	Cork City Water Supply (Abstract River Lee) – approximately **22.10 km** downstream from discharge location.
Knockraha	Zone3 Glashaboy (Abstract Glashaboy River) – more than **7.30 km** downstream from discharge location.
Ballincurrig	Zone3 Tibbotstown (Owenacurra River - Over Pump) – approximately **6.60 km** downstream from discharge location. Discharge upstream of location of Lisgoold North and South discharges. Zone3 Midleton (Owenacurra River) – approximately **2.70 km** from Tibbotstown abstraction.
Lisgoold North	Zone3 Tibbotstown (Owenacurra River - Over Pump) – approximately **5.10 km** downstream from discharge location. Discharge upstream of location of Lisgoold South discharge. Zone3 Midleton (Owenacurra River) – approximately **2.70 km** from Tibbotstown abstraction.

Lisgoold South	Zone3 Tibbotstown (Owenacurra River - Over Pump) – approximately **4.60 km** downstream from discharge location. Zone3 Midleton (Owenacurra River) – approximately **2.70 km** from Tibbotstown abstraction.
Ballincollig	Cork City Water Supply (Abstract River Lee) – approximately **6.90 km** downstream from discharge location.
Killumney	Cork City Water Supply (Abstract River Lee) – approximately **13.40 km** downstream from discharge location.

5.12.5 Waste Management

Ireland's waste management landscape changed radically with the implementation of the Waste Management Act in 1996. From a low base, the country made great strides in reducing disposal to landfill, providing an infrastructure for the collection of recyclables and developing expertise in waste management, regulation, research and innovation. Ireland showed innovation by being the first country to introduce a plastic bag tax and to launch a National Waste Prevention Programme. However, Ireland has reached a plateau in relation to waste management; to further deliver the necessary waste prevention and circular economy ambitions will be a challenge.

The latest data highlights the need for Ireland to do more to prevent waste, improve recycling, increase self-sufficiency and move towards a more integrated approach to waste management, as part of implementation of the new national waste policy, the EU Circular Economy Package and the European Green Deal.

Waste generation in Ireland has increased by over 20% since 2012. The latest waste statistics[71] indicate that that 15.7 million tonnes of waste was generated in Ireland in 2022. This is a decrease of 1.9 million tonnes from an estimated 17.6 million tonnes in 2021. Mineral Wastes are the largest waste material type, accounting for 10 million tonnes or two-thirds of all waste generated, of which construction and demolition wastes generated in 2022 was of 240,000 tonnes.

Ireland missed the waste electrical and electronic equipment (WEEE) collection target in 2020. The WEEE collection rate was 51% in 2022, a significant drop from 64% in 2021 and well below the EU target of 65%.

Overall, the total quantity of waste recovered through recycling or composting has increased over the last number of years but not fast enough to keep up with the increasing waste generation rates. Ireland also continues to rely on export for treating a number of key waste streams, particularly for the treatment of municipal waste, hazardous waste, packaging waste, organic waste and waste tyres.

Wastewater treatment sludge

Sewage sludge is a by-product of wastewater treatment. The Urban Wastewater Treatment Directive requires sewage sludge to be reused whenever appropriate. Good sludge management, such as removing sludge from a treatment plant at an appropriate rate, is an essential part of the treatment process. Uisce Eireann removed 58,964 tonnes of sewage sludge from its treatment plants in 2023[70]. Sludge contains valuable nutrients such as nitrogen and phosphorus and most of this was subsequently reused as a fertiliser or soil improver on agricultural land (53,244 tonnes), with the rest used for composting (5,720 tonnes).

Uisce Éireann is progressing a number of initiatives through the water treatment plant residual strategy taking a circular economy model for the management of sludges, as they provide a sustainable source of precious finite materials. The sludge provides an alternative/ complement to current raw materials being

[71] Environmental Protection Agency (EPA). 2024. Circular Economy and Waste Statistics Highlight Report 2022. Accessed: March 2025. Available from Circular Economy and Waste Statistics Highlights Report 2022 | Environmental Protection Agency

used. We view water sludge as a valuable resource particularly in the context of the circular economy model. This model is in direct contrast to the current linear model of 'take, make, consume, dispose', with landfill being the primary end point. Uisce Éireann are progressing a number of potential sustainable options. Recovery/reuse of the sludge is the preferred long term sustainable option for Uisce Éireann. A key milestone has been reached with nearly 90% of water treatment sludge going to circular economy outlets.

Uisce Éireann is currently involved in a number of innovative projects, funded by the Water Services Innovation Fund administered by the Commission for Regulation of Utilities and will deliver benefits for our customers, the environment and the economy. These projects include enhancing existing wastewater treatment plants through aerobic granular sludge addition and developing pilot sludge treatment reed beds for use in treating and de-watering water sludge containing aluminium sulphate.

The EPA has identified Cork City as a priority area where wastewater treatment needs to be improved to prevent wastewater discharges from causing harm to the aquatic environment[70].

5.12.6 Future Trends

Natural assets/land use

Whilst agriculture is the dominant land cover type across Ireland and second greatest land cover type within the study area, at national level there has been an overall downwards trend in this land usage since the 1990s, with shift from agricultural land cover to forestry and artificial areas.

Artificial surfaces (roads, residential development and commercial development) make up 3.8% of Ireland's land cover. On a national level, artificial areas have increased by 65% since the 1990s. There is no publicly available data for the study area specifically, however it is anticipated that the overall trend of a decrease in agricultural land cover and increase in artificial land cover seen nationally is likely also reflected within the study area[22, 68].

Built material assets

Significant population growth is forecast within the study area over the coming 15 years , with a 50% to 60% increase in the population of Cork anticipated by 2040. This will require provision of new infrastructure to service the increased population and facilitate economic growth. However, rural and coastal areas also make a strong contribution to the CMA economy and sense of character, so efforts to maintain rural communities are necessary to benefit the wider regions.

Waste and the Circular Economy

The Circular Economy and Miscellaneous Provisions Act (2022)[15], underpins Ireland's shift from a 'take-make-waste' linear model to a more sustainable pattern of production and consumption, that retains the value of resources in the economy for as long as possible and that will significantly reduce the nation's greenhouse gas emissions. The 2022 Whole of Government Circular Economy Strategy[17] provides the policy framework for the circular economy in the country and Ireland's National Waste Policy 2020-2025, A Waste Action Plan for a Circular Economy[16], sets out a roadmap that aims to ensure that Ireland not only meets the legal targets but also takes full advantage of the opportunities of the circular economy.

The new legislation and strategies strengthen the approach to addressing waste and implementing circular economy principles. An important element will be the mapping of potential heat sources, especially waste and renewable energy, to be compliant with European Commission directives on "efficient" district heating. Data centres can be designed to capture waste heat for distribution and reuse[72].

The circular material use rate, or circularity rate, is a measure of material reused, recycled and recovered and fed back into the economy. In 2022, Ireland's material circularity rate was 1.8%, while the average circularity rate in the EU was 11.5%[22]. No data on circularity material use rates relevant to the study area specifically has been identified, however it is not anticipated to differ significantly from the national trend.

[72] Organisation for Economic Cooperation and Development (OECD). 2025. OECD Economic Surveys: Ireland 2025. Accessed: March 2025. Available from: https://www.oecd.org/en/publications/oecd-economic-surveys-ireland-2025_9a368560-en.html

The development of circular economy principles will impact all sectors of society and collaboration between stakeholders will be key to this transition in Ireland. Some examples of how the wastewater treatment processes may be changed by the progressive adoption of circular economy principles include:

- Reusing wastewater in sectors such as agriculture and manufacturing can decrease Ireland's dependence on freshwater sources. Reusing wastewater can also contribute to reducing the impact of flooding and improving water quality.
- Nutrient recovery systems can extract valuable resources from wastewater sludge, for example by converting nutrients to fertilisers or energy. This can contribute to reducing nutrient pollution, potentially reducing treatment requirements for water abstracted from rivers. Sustainable agricultural practices will also support this trend.
- Minimising use of consumables in the delivery of wastewater services and generating renewable electricity.

There are several challenges to overcome to maximise the opportunities associated with circular economy principles, in particular wastewater reuse. These include public perception, regulatory challenges and market failures linked to the cost of reused water[73].

Relevant to these challenges are the limitations on landfill capacity. According to the EPA's Circular Economy and Waste Statistics Highlight Report 2022[71,] two of the three operational municipal landfills will approach their maximum lifetime consented capacity by 2027 if additional capacity is not authorised. There is a risk in the event of export markets closing at short notice and the planned contingency landfill capacity needs to be secured without delay. Treating waste as close to its source as possible (the proximity principle) is one of the core pillars of EU waste policy. Waste exports also represent missing valuable opportunities to maximise the beneficial and efficient use of waste materials. By addressing waste infrastructure deficits, Ireland can develop circular economy opportunities and reduce the emissions associated with transporting waste over long distances. Whilst the sludge disposal does not fall under the remit of the CWS, the nature of wastewater treatment processes employed can affect the potential range of disposal or reuse options available.

5.12.1 Key Considerations for CWS and the SEA

Key challenges and opportunities in relation to the material assets topic are:

Challenges

- Land management: agricultural practices can contribute to the release of nutrients and fertilisers into waterbodies, causing eutrophication (the gradual increase in the concentration of phosphorus, nitrogen, and other plant nutrients in an aquatic ecosystem). Wastewater sludge spreading can also contribute to this, with nutrient levels within wastewater sludge affected by the treatment process employed.
- Resilience of infrastructure and operations – Uisce Éireann's wastewater treatment infrastructure will have to cope with the various impacts of climate change, and support growth.

Opportunities

- Land use and habitat type are the basis for natural capital and ecosystem services with links across topics including biodiversity, carbon, water, food production, fisheries and recreational uses.
- Waste management and potential to contribute to the circular economy - supporting sustainable waste disposal and minimising release of industry pollutants into water sources can benefit the environment, reduce carbon and reduce treatment costs.

[73] Environmental Protection Agency (EPA). 2019. Water Reuse in the Context of the Circular Economy. Accessed: March 2025. Available from: https://www.epa.ie/publications/research/water/Research_Report_293.pdf

5.13 Landscape, Townscape and Seascape

5.13.1 Landscape Baseline Condition

Landscapes reflect many variables, including underlying geology, soils, topography, land cover including habitats and agricultural, forestry and urban land, hydrology, historic and cultural development, and climate. These physical and socio-economic influences, and interrelationships, makes one landscape different from another. Landscape character is the distinct and recognisable pattern of elements, or characteristics, in the landscape that make these differences. Landscape features such as hedgerows field boundaries, woodlands, riparian corridors, canals and wetlands are part of landscape character and are also important as ecological corridors providing connectivity but can be especially vulnerable to linear infrastructure development.

The European Landscape Convention (ELC) is the first international treaty to focus solely on landscape. The Convention promotes the protection, management and planning of European landscapes. The Irish Government ratified the Convention in 2002. The National Landscape Strategy 2015-2025[74] was put in place to drive compliance with the European Landscape Convention by establishing principles that provide the high-level policy framework to achieve the Convention's objectives.

The Landscape Character Assessment for County Cork[75] identified 76 Landscape Character Areas (LCA), which were amalgamated into a set of 16 generic Landscape Character Types (LCT) based on similarities evident within the various areas. The study area overlaps Cork City Harbour and Estuary area and partially, the Broad Bay Coast, Indented Estuarine Coast, Broad Fertile Lowland Valleys (Blarney, Ballincollig, West Carrigaline), Broad Fertile Lowland Valleys (Cloyne), Rolling Patchwork Farmland (Belgooly, Nohoval), Hilly River and Reservoir Valleys (Dripsey, Coachford) and Fissured Fertile Middleground (Watergrasshill) areas, which are mostly of high and very high landscape value and sensitivity.

The Cork City Green and Blue Infrastructure Study[76] identified seven Landscape Character Areas (LCA), within the Cork City:

- Estuarine/Riverine;
- Natural harbour;
- Historic urban core;
- Inner-city residential;
- Sub-urban residential;
- Urban sylvan character; and
- Urban industrial/commercial/Institutional.

The emerging Cork City Development Plan 2022-2028 also identifies Areas of High Landscape Value (AHLV) and Landscape Preservation Zones (LPZ). AHLV display an intrinsic landscape character and a special amenity value, and LPZ are areas in need of special protection as their character and amenity value is considered to be to highly sensitive to development. In addition, Scenic Routes within the study area, as identified in the Cork County DP 2022-2028 and emerging Cork City DP 2022-2028 can be viewed.

Townscape is the landscape within the built-up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces and the relationship between buildings and

[74] Department of Arts, Heritage and the Gaeltacht (DAHG). 2021. National Landscape Strategy for Ireland 2015-2025. Accessed: March 2025. Available from: https://www.gov.ie/en/publication/8a59b-national-landscape-strategy/

[75] Cork County Council. 2022. Cork County Development Plan 2022. Accessed: March 2025. Available from: https://www.corkcoco.ie/sites/default/files/2022-06/volume-1-main-policy-material.pdf

[76] Cork City Council. 2022 Cork City Green and Blue Infrastructure Study. Accessed: March 2025. Available from: Supporting Studies - Cork City Council

open spaces. Based on the Irish Historic Towns Atlas Online[77], the origins of principal localities in the study area are listed below:

- Cork City: Anglo – Norman town from 12th-15th centuries and Viking sea port from 9th – 15th centuries;
- Cobh: new town (seaside resort, garrison, town and railway junction town from 19th century;
- Mallow, Fermoy, Midleton: towns of the Tudor-Stuart plantation period from 15th – 16th centuries and an Anglo-Norman boroughs with doubtful settlement continuity and manorial centres from 12th-15th centuries;
- Youghal, Kinsale: Anglo – Norman town of 12th-15th centuries and presumed Viking sea port from 9th – 15th centuries.

Across the Cork County, there are layers of archaeological and historic landscape, such as mining landscapes, prehistoric settlements and strategic battlefield, ambush and siege sites, and coastal fortifications with their associated landscape (the Napoleonic landscape of Cork Harbour);

The scenic and landscape qualities of coastal and upland areas, particularly along the peninsulas in the southwest and Cork Harbour are very important for region's tourism economy. Seascape , as an extension of landscape, with 1,100km of coastline, is a crucial element of the Cork County's history, identity and culture.

The Regional Seascape Character Areas of County Cork include[78]:

- SCA9 - Atlantic South West Rias, Bays and Islands - this SCA comprises an indented coastline of the five southwestern peninsulas of counties Kerry and Cork; Dingle, Iveragh, Beara, Sheep's Head and Mizen, and their intervening bays; Dingle Bay, Kenmare Bay (River), Bantry Bay, Dunmanus Bay and Roaringwater Bay;
- SCA10 - Atlantic Celtic Bays and Estuaries - this large SCA comprises a stretch of Cork and Waterford coastline and bays from Cape Clear to Helvick Head, Co. Waterford;
- SCA11 - Cork Harbour and Estuary - this SCA is relatively small at regional scale but due to its historical role and influence on the surrounding seascapes, is identified with its own character area.

There are also Areas of Special Amenity which are designated according to their outstanding natural beauty for special recreational value. For Cork City, these sites include the regional and city parks (e.g. Tramore Valley Park, Lee Fields), area parks (e.g.The Lough, Glen River Park) and local parks (e.g. Shalom Park). More broadly, areas which can be most sensitive to visual impacts in Cork County, include:

- Lands with an elevation of >200m;
- Forestry areas;
- Lands with a slope of >30;
- Open landscapes like lakes and estuaries, seaside and coastal amenities; and
- Other natural land cover types.

5.13.2 Future Trends

The National Landscape Strategy 2015-2025 is in the process of being implemented and will be Ireland's vehicle for complying with the EU Landscape Convention.

The existing landscape character within the study area is not expected to change significantly in the immediate future, although planned developments are potential sources of change and loss of landscape feature. Longer term influences on landscape character would be related to land use changes such as

[77] Royal Irish Academy. N.d. Accessed: March 2025. Available from: https://www.ria.ie/research-programmes/irish-historic-towns-atlas/

[78] The Marine Institute. 2020. Definition and Classification of Ireland's Seascapes. Accessed: March 2025. Available from: https://emff.marine.ie/sites/default/files/bluegrowth/PDFs/final_seascape_character_assessment_report_with_annexes.pdf

agricultural and forestry practices, and climate change responses and their impacts on habitats and landscape features.

5.13.3 Key Considerations for CWS and the SEA

Key challenges and opportunities in relation to Landscape, Townscape and Seascape are:

Challenges

- Potential for new wastewater treatment infrastructure to impact landscape, townscapes and seascapes including visual amenity during construction and operation.
- Potential for the new wastewater treatment infrastructure to be constrained by the need to protect the landscape character and local visual amenity in sensitive areas.
- Potential for wastewater discharges to affect the amenity value of rivers and coastal areas.

Opportunities

- Opportunities for enhancements linked to biodiversity and water quality improvement measures, such as restoring riparian corridors, nature- based solutions and catchment management approaches and benefits from cleaner, rivers, estuaries and coastal areas.

5.14 Cultural Heritage – Archaeological and Architectural

5.14.1 Cultural Heritage

Record of Monuments and Places

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 replaced the National Monuments Acts and represents a significant modernisation of the law protecting Ireland archaeological and historic heritage. This Act has yet to commence in large part but repeals the National Monuments Acts 1930 to 2014 and replace those Acts with provisions for the protection of historic heritage, provisions for the protection of archaeological heritage, provisions for the regulation of certain activities in the interests of such protection and provisions enabling the State to ratify or accede to certain international conventions which relate to such protection or regulation.

National Inventory of Architectural Heritage

The Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 was enacted to provide for the establishment of a National Inventory of Architectural Heritage (NIAH) and to provide for the obligations of statutory authorities in respect of these historic monuments. In this Act "architectural heritage" means all structures and buildings together with their settings and attendant grounds, fixtures and fittings; groups of such structures and buildings; and sites which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Each structure is given a rating: National, Regional, Local or Record Only. Any structure rated as being Regional or higher importance will be recommended to have a separate record under the Record of Protected Structures (RPS).

Record of Protected Structures

The Planning and Development Act 2000 (as amended) requires each planning authority to compile and maintain a RPS that forms part of each planning authority development plan. The purpose of the RPS is to protect structures, or parts of structures "which form part of the architectural heritage, and which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest." Sites, structures and groups of structures rated by the NIAH as being of Regional or above importance are included in the RPS which provides statutory protection for Ireland's architectural heritage.

While the prime objective of the RPS is to protect the structure and its setting, proposals for the sensitive restoration, extension and alteration of Protected Structures are positively encouraged by the Planning Authority.

Sites and Monuments Record

The Sites and Monuments Record (SMR) appear on the Archaeological Survey of Ireland Map Viewer, however it does not, of itself confer legal protection. Not all of these are included in the RMP and hence have no statutory protection.

The designations considered as part of the cultural heritage baseline are:

- Archaeological sites monuments included on the RMPs and/or SMRs; and
- Architectural structures and sites included on the NIAH and/or RPSs.

Architectural Conservation Areas

Architectural Conservation Areas (ACAs) are places, areas, group of structures or townscapes that are of special architectural, historical, archaeological, technical, social, cultural, or scientific, interest, or that contributes to the appreciation of an RPS site. ACAs are identified by local planning authorities and protected under Section 81 of the Planning and Development Act 2000.

Unknown archaeological remains

The National Monuments Service has an interactive mapping search facility that provides access to all records relevant to the archaeological heritage of Ireland. This extensive body of records is stored on the national database of the Archaeological Survey of Ireland, and a list of recorded archaeological monuments for each county is available at www.archaeology.ie based on OSI mapping. The National Monuments Service is also tasked with addressing the protection and preservation of Ireland's underwater cultural heritage. The Underwater Archaeology Unit of the National Monuments Service has a wide remit, including quantification of the record, research, underwater survey, excavation and regulation. The Underwater Archaeology Unit maintains the Wreck Viewer and Wreck Inventory of Ireland Database and also assesses potential development impacts on underwater archaeology by making recommendations to the relevant planning authorities and other regulatory bodies on developments which have the potential to impact on underwater archaeology[79]. Additionally, National Monuments Service supported creation of the Database of Irish Excavation Reports[80] which includes a summary account of archaeological excavations in Ireland since 1969.

5.14.2 Cultural Heritage Baseline Condition

The study area contains 2,180 SMR sites, 1,215 NMS sites and 4,627 NIAH sites (see Figure 5-12) as well as 59 architectural conservation areas. There are also potentially unknown, undesignated archaeological and architectural remains within the study area, as well as likely several undesignated heritage assets within the coastal parts of the study area. There are no UNESCO World Heritage Property sites within the study area[81].

[79] National Monuments Service. 2023. Underwater Archaeology. Accessed: March 2025. Available from: https://www.archaeology.ie/underwater-archaeology

[80] Department of Housing, Local Government and Heritage. 2024. Database of Irish Excavation Reports. Accessed: March 2025. Available from: https://excavations.ie/

[81] United Nations Educational, Scientific and Cultural Organization (UNESCO). 2024. World Heritage in Ireland Map. Accessed: March 2025. Available from: https://www.worldheritageireland.ie/

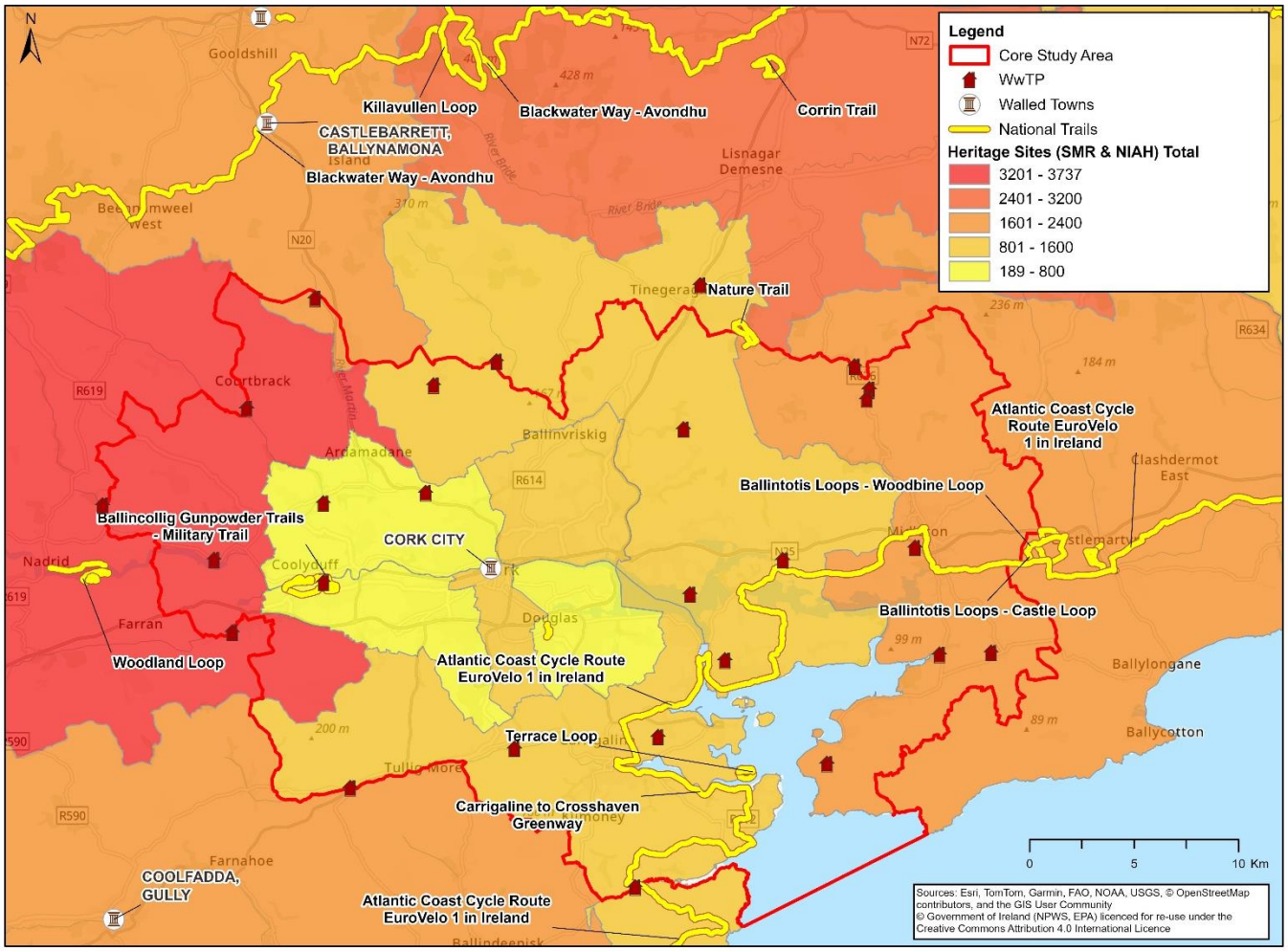

Figure 5-12 Cultural heritage, recreation and tourism sites[82,83]

5.14.3 Future Trends

The National Heritage Plan, Heritage Ireland 2030, was published in 2022[84]. This plan sets out a wide range of actions aimed at protecting and nurturing Ireland's heritage and recognising the importance of community engagement and the links to biodiversity and climate change. An Implementation Plan for the actions is to be developed. The Historic Archaeological and Heritage Act 2023, replacing the National Monuments Act, will introduce a single integrated licensing system and statutory codes of practice, and will confer legal protection on new finds at archaeological sites. These forthcoming changes to cultural heritage legislation and policy strengthen the protection of designated cultural, archaeological and architectural heritage assets and as well as undesignated archaeological. There are recognised threats to heritage assets from development activities affecting settings or resulting in loss of buried unknown assets. Climate change and habitat loss can also affect the preservation of buried archaeological remains.

5.14.4 Key Considerations for CWS and the SEA

The key challenges and opportunities in relation to Cultural Heritage for the CWS and SEA are:

[82] Department of Housing, Local Government and Heritage (DHLGH). 2024. National Inventory of Architectural Heritage (NIAH). Accessed: April 2025. Available from: https://data.gov.ie/dataset/national-inventory-of-architectural-heritage-niah-national-dataset

[83] Department of Housing, Local Government and Heritage (DHLGH). 2024. National Monuments Service - Archaeological Survey of Ireland. Accessed: April 2025. Available from: https://data.gov.ie/dataset/national-monuments-service-archaeological-survey-of-ireland

[84] Department of Housing, Local Government and Heritage (DHLGH). 2023. Heritage Ireland 2030. Accessed: March 2025. Available from: https://www.gov.ie/en/publication/778b8-heritage-ireland-2030/

Challenges

- The potential for the construction of wastewater treatment infrastructure to damage archaeological and architectural heritage monuments/site or affect access to or the settings of sites/monuments.
- The potential for new structures to impact the setting of heritage sites/monuments.
- New developments could be constrained by the need to avoid and protect sites/monuments and their settings.

Opportunities

- Opportunities for linking protecting heritage with supporting biodiversity and climate change objectives.
- Potential to uncover (and damage) unknown, undesignated archaeological remains, including underwater and marine archaeology but also potential to record and add to knowledge and improve access to cultural heritage and archaeology.

5.15 Geology and Soils

5.15.1 Geology Baseline Condition

Northern and central parts of the study area comprise mainly of sandstone, conglomerate and mudstone. Central and southern parts of the study area include tournaisian limestone, mudstone and limestone. Devonian sandstone and mudstone (Old Head Sandstone Fm) are found at smaller scale throughout the study area[85].

The Geological Survey of Ireland (GSI) have identified Irish Geological Heritage (IGH) Sites as part of their IGH Programme, a partnership between GSI and the NPWS. IGH sites comprise caves, dry valleys, springs and swallow holes. The GSI audit in the hydrometric modelling area identified ten Irish Geological Heritage Sites (IGHS) as listed below in Table 5.17 and shown in Figure 5-12. According to the Geological Survey of Ireland (GSI), the audit of County Geological Sites for County Cork is not completed to date[86].

There are no UNESCO Global Geoparks in County Cork[87].

[85] Geological Survey Ireland. 2021. Bedrock Geology 1:100,000 Ireland (ROI) ITM. Accessed: March 2025. Available from: https://dcenr.maps.arcgis.com/home/item.html?id=a40f6a8ca91f4340a86b12649d831d74

[86] Geological Survey Ireland. 2022. Geological Heritage Audited Sites Ireland. Accessed: March 2025. Available from: https://www.gsi.ie/en-ie/data-and-maps/Pages/Geoheritage.aspx#Nationwide

[87] United Nations Educational, Scientific and Cultural Organization (UNESCO). 2023. UNESCO Global Geoparks. Accessed: March 2025. Available from: https://www.unesco.org/en/iggp/geoparks#list

Table 5.17 Irish Geological Heritage Sites located within the core study area

Site name	Total site area (km²)	Area within core study area (km²)
Ardoginna	0.0418	0.0031
Whiting Bay and Goat Island	0.5882	0.3090
Inniscarra Bar	0.0002	0.0002
Ballinlough Fields	0.0010	0.0010
Beaumont Quarry	0.0377	0.0377
Patrick's Hill	0.0003	0.0003
Shandon Tower	0.0006	0.0006
St Fin Barre's Cathedral	0.0013	0.0013
Blackrock Diamond Quarry	0.0423	0.0423
St Joseph's Section	0.0003	0.0003

5.15.2 Soil Baseline Condition

There is relatively little legislation relating directly to soil and soil protection at an international level and there is no legislation solely directed to soil protection in Ireland. However, the key driver for future policy is the EU Soil Strategy for 2030[88] which was published in 2021. This sets out the aim for EU soils to be in a healthy condition by 2050. Soils are defined in this strategy as:

"when they are in good chemical, biological and physical condition, and thus able to continuously provide as many of the following ecosystem services as possible:

- Provide food and biomass production, including in agriculture and forestry;
- Absorb, store and filter water and transform nutrients and substances, thus protecting groundwater [and surface water] bodies;
- Provide the basis for life and biodiversity, including habitats, species and genes;
- Act as a carbon reservoir;
- Provide a physical platform and cultural services for humans and their activities;
- Act as a source of raw materials;
- Constitute an archive of geological, geomorphological and archaeological heritage".

Soils in the study area are represented mainly by coarse and loamy soils from the following associations:

- Ross Carbery (900e) - Coarse loamy drift with siliceous stones;
- Clonroche (1100a) - Fine loamy drift with sillceous stones;
- Ballylanders (1100e) - Fine loamy over shale or slate bedrock;
- Clashmore (1100n) - Coarse loamy drift with siliceous stones;
- Broomhill (1100s) - Fine loamy over sandstone bedrock.

[88] Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions. EU Soil Strategy For 2030 Reaping The Benefits Of Healthy Soils For People, Food, Nature And Climate, Com (2021) 699, Final. Accessed: March 2025. Available from: EUR-Lex - 52021DC0699 - EN - EUR-Lex

Along the river courses in the area River alluvium soils are present from River (5RIV) association and in close vicinity to Cork Harbour and Lough Mahon small areas with Coarse loamy drift with siliceous stones from Puckane (660c) association and Tidal Marshes are present.

Figure 5-13 below shows the distribution of soil associations within the study area. There are no areas of peatland soils within the study area, based on Peatland of Ireland[89] map published by Teagasc.

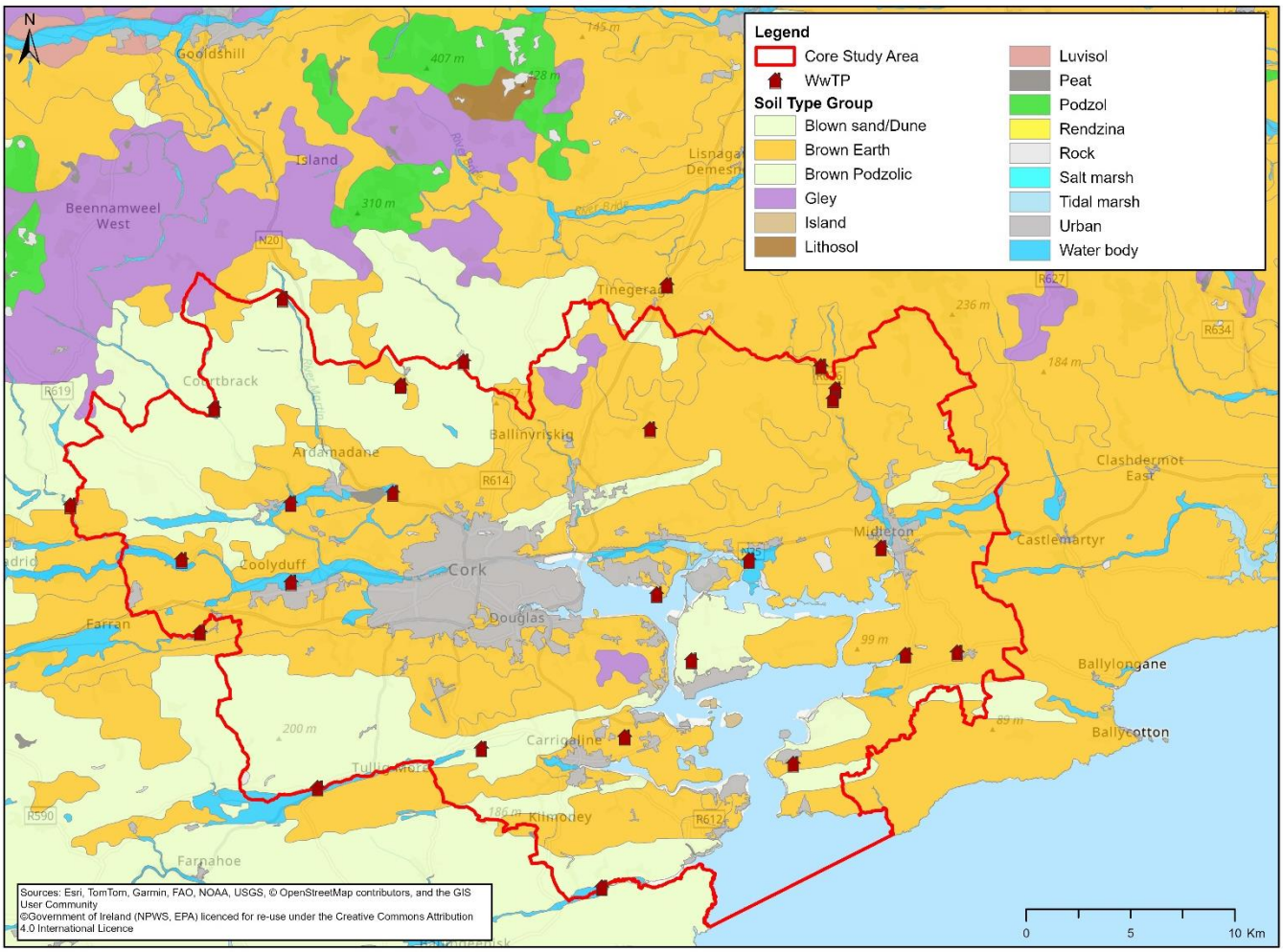

Figure 5-13 Simplified soils map[90]

Soil quality or contamination

The EPA's State of the Environment 2024[22] highlights several key degradation processes that can impact on soils: soil sealing, erosion, organic matter decline, compaction, salination and sodification, nutrient imbalance, contamination, and loss of soil biodiversity. Surface sealing (urbanisation) is one of the main soil quality pressures for Ireland with human activity also being a significant driver of degradation through poor (or inappropriate) land management practices.

Soil contamination can occur as a result of unauthorised waste-related activities, historical activities (mines), leakages and accidental spillages of chemicals. The EPA is responsible for enforcing the remediation of contamination identified at EPA-licensed facilities but there is currently no specific contaminated land policy or legislation in Ireland.

[89] Teagasc. 2023. Peatlands of Ireland. Accessed: March 2025. Available from: https://www.teagasc.ie/media/website/environment/soil/Peatlands-of-Ireland-Map.pdf

[90] Teagasc. N.d. Irish Soil Information System. Accessed: April 2025. Available from: http://gis.teagasc.ie/soils/

Soil and the circular economy

Soil plays a key role in recycling water, carbon and nutrients, and can break down and filter pollutants as well as providing raw material resource. The EU Soil Strategy 2030 proposes a land take hierarchy placing emphasis on aiming to avoid loss of soil resources and promote development of healthy soils.

5.15.3 Future Trends

Changes in geology are generally considered to happen over very long timescales. However, changes affecting soils due to water regime, climate change, land use practices influence soil carbon, nutrients levels and erosion rates and are relevant within the timescale for the CWS.

Soils and ecosystems services they support are resources that need to be protected, monitored and managed, from high-level national and sectoral land use plans through to local management activities on farms, forest plantations, peatlands, urban and rural settlements. In the absence of European and national soil legislation, the challenge remains to ensure a consistent approach to protecting and managing the limited soil resource, in the context of supporting environmentally sustainable economic and population growth. The EU Soil Strategy to 2030 which is closely linked to the EU Biodiversity Strategy and EU Nature Restoration Law, sets out actions to support achieving it overarching long term aims which should also influence future national policy related to soils.

5.15.4 Key Considerations for CWS and the SEA

Key challenges and opportunities in relation to geology and soils potentially relevant for the CWS and the SEA are:

Challenges

- Land take with a loss of soil resources from construction works on wastewater services infrastructure.
- Soil management and health affecting how water and nutrients are retained in soil and susceptibility to erosion with loss of soil and high levels sediment and nutrients in run off entering water bodies.
- Potential impact on geological resources and protected sites from construction works;
- Indirect effects on soil quality, beneficial and negative, from sludge spreading and potential for waterbody pollution as wastewater treatment processes influence the nutrient and heavy metal content of sludges.

Opportunities

- Opportunities for peatland restoration including peat rewetting initiatives, catchment-based soil conservation initiatives and wetland enhancements/creation. These approaches can support water quality and soil health and provide other ecosystem benefits such as carbon sequestration and support biodiversity enhancement.
- Opportunities to use soil management plans to apply hierarchy to avoid loss and promote reuse and maintain soil health.

5.16 Air Quality

5.16.1 Air Quality Baseline Condition

Air pollution is a major environmental risk to our health. According to the World Health Organisation (WHO), air pollution can increase the risk of stroke, heart disease, lung cancer, and both chronic and acute

respiratory diseases, including asthma. It is estimated that there are approximately 1,600 premature deaths annually in Ireland[91] due to poor air quality from fine particulate matter ($PM_{2.5}$).

Under the EU's Green Deal's Zero Pollution Action Plan[92], the European Commission set the 2030 goal of reducing the number of premature deaths caused by fine particulate matter ($PM^{2.5}$, a key air pollutant), by at least 55% compared with 2005 levels. To this end, in 2022 the European Commission published a proposal to review the ambient air quality directives, aiming, among other things, to align the air quality standards more closely with WHO recommendations.

The CAFÉ (Ambient Air Quality and Cleaner Air for Europe) Directive establishes objectives on how to assess ambient air quality in order to reduce, prevent and avoid harmful effects on our health and on the environment.

Cork City Council's Air Quality in Cork City Annual Report 2022[93] states that air quality in Cork is generally good but declines during winter months and at heavy traffic points, with particulate matter ($PM_{2.5}$) emissions from burning solid fuels for domestic heating and nitrogen dioxide (NO_2) emissions from road traffic being the main contributors to poor air quality.

Table 5.18 shows EPA regulatory air quality monitoring data in the study area. There are eight active air quality monitoring sites within the study area as listed in Table 5.18. Exceedances of the 24 hour 2005 WHO Air Quality Guideline (AQG) level for PM_{10} (>50µg/m^3) were noted at several locations, however annual 2005 WHO AQG levels were not exceeded at any stations. In addition, Cork City Council also maintains a PM2.5 monitoring network across the city, and monitoring data from this network 2022 also showed that there were no exceedances of the WHO AQG level in 2022[93].

Table 5.18 Selected pollutants measured in 2021 failing the WHO AQG levels

EPA air quality monitoring site	2022 air quality monitoring results[94]	2023 air quality monitoring results[95]
Cork Southern Link Road	Two PM_{10} exceedances (>50 µg/m^3); No NO_2 exceedances	No NO_2 or PM_{10} exceedances
Cork City Centre	Two PM_{10} exceedances (>50 µg/m^3) NO_2 not monitored)	No PM_{10} exceedances. No NO_3 data available.
Heatherton Park	Two PM_{10} exceedances (>50 µg/m^3) NO_2 not monitored)	One PM_{10} exceedance; NO_2 not monitored
Bishopstown MCU	No PM_{10} exceedances; NO_2 not monitored	No NO_2 or PM_{10} exceedances
Cork UCC	PM_{10} not monitored; No NO_2 exceedances	No NO_2 or PM_{10} exceedances
Lower Glanmire Road	PM_{10} not monitored; No NO_2 exceedances	Two PM_{10} exceedances (>50 µg/m^3); No NO_2 exceedances

[91] Environmental Protection Agency (EPA). 2024. Air Quality in Ireland Report 2023. Accessed: March 2025. Available from: https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2023.php

[92] European Commission. 2021. Zero Pollution Action Plan. Accessed: March 2025. Available from: https://environment.ec.europa.eu/strategy/zero-pollution-action-plan_en

[93] Cork City Council. 2022. Air Quality in Cork City Annual Report 2022. Accessed: March 2025. Available from: https://www.corkcity.ie/en/council-services/services/environment/air-quality/cork-city-council-annual-air-quality-report-2022/

[94] Environmental Protection Agency (EPA). 2022. Air Quality Bulletin 2022. Accessed: March 2025. Available from: https://s3.eu-west-1.amazonaws.com/airquality.ie/docs/bulletins/Air-Quality-Bulletin-2022.pdf

[95] Environmental Protection Agency (EPA). 2023. Air Quality Bulletin 2023. Accessed: March 2025. Available from: https://s3.eu-west-1.amazonaws.com/airquality.ie/docs/bulletins/Air-Quality-Bulletin-2023.pdf

EPA air quality monitoring site	2022 air quality monitoring results[94]	2023 air quality monitoring results[95]
Cobh	No PM_{10} exceedances (>50 µg/m^3); NO_2 not monitored	No PM_{10} exceedances; NO_2 not monitored
Cork Harbour	One PM_{10} exceedance (>50 µg/m^3); NO_2 not monitored	No PM_{10} exceedances; NO_2 not monitored

Under the Clean Air for Europe Directive, EU member states must designate "Zones" for the purpose of managing air quality. For Ireland, four zones were defined in the Air Quality Standards Regulations (2011).

According to the EPA[22], the main areas defined in each zone are:

- Zone A: Dublin;
- Zone B: Cork;
- Zone C: Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise; and
- Zone D: Rural Ireland, i.e., the remainder of the State excluding Zones A, B and C.

The central part of the study area falls within Zone B Cork, with the remainder of the study area falling within Zone D Rural Ireland.

In general, the water industry is not a major contributor to air quality issues, although there is potential for odour nuisance as a result of nearby wastewater treatment facilities. There is a requirement to comply with air pollution regulations and also identify potential opportunities for reducing emissions.

5.16.2 Future Trends

WHO published new AQGs in 2021 based on the impact of pollutants on our health. There are 4 Interim Targets (IT) identified (IT1, IT2, IT3, IT4) towards achieving the final AQG levels. Europe as part of the European Union's (EU) Green Deal and the EU's zero pollution visions for 2050 is revising its air quality standards to align them more closely with the lower WHO recommendations. Currently air quality within the study area is of an acceptable standard and remains within the European Union (EU) legislative and target values, however achieving the WHO Air Quality Guidelines in the future will challenging for Cork and Ireland as whole.

The Cork City Council Air Quality Strategy 2021-2026[96] outlines a number of actions aimed at reducing air pollution within the city area, such as measures aimed at increasing public awareness, developing city wide air quality monitoring (implemented in 2022), increasing the accessibility and attractiveness of public transport and active travel modes and supporting the transition to electric vehicle (EV) usage.

5.16.3 Key Considerations for CWS and the SEA

Key challenges and opportunities in relation to air quality potentially relevant for the CWS and the SEA are:

Challenges and opportunities

- The temporary generation of air pollution such as during construction and operational phases of wastewater infrastructure development, although it should be noted that upgrades to existing infrastructure and the provision of new services are likely to present an opportunity to utilise technologies that are more energy efficient.
- Odour can be a concern from wastewater treatment and agricultural sludge spreading and new facility design or upgrades to wastewater treatment will need to take account of standards required

[96] Cork City Council. 2021. Air Quality Strategy 2021-2026. Accessed: March 2025. Available from: https://www.corkcity.ie/en/council-services/services/environment/air-quality/air-quality-strategy/

in relation to receptors around plants and good practice approaches for sludge spreading and storage.

In the context of the development of the CWS, the challenges and opportunities related to air quality are considered localised issues addressed through application of appropriate standards identified at programme and project levels. In terms of the SEA of the draft CWS they have therefore been considered generally as in terms of potential nuisance or disturbance effects under the topic of population and health as set out in the SEA Scoping Report.

5.17 Noise and Vibration

5.17.1 Noise and Vibration Baseline Condition

According to the WHO, noise is defined as unwanted sound and can be harmful to human and ecosystem health. The Noise Directive (2002/49/EC), which is commonly referred to as the Environmental Noise Directive or END relating to the assessment and management of environmental noise, was transposed into Irish national legislation via the Environmental Noise Regulations 2006 (S.I. No. 140 of 2006). This Directive aims to put in place a European wide system for identifying sources of environmental noise, informing the public about relevant noise data and taking the necessary steps to avoid, prevent or reduce noise exposure . The Regulations were revised by the European Communities (Environmental Noise) Regulations 2018 (S.I. 549/2018) and amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. 663/2021).

The END does not set any limit value, nor does it prescribe the measures to be used in the action plans, which remain at the discretion of the competent authorities. Limit values are left to each member state. At this point in time, Ireland does not have any statutory noise limit values.

Cork Agglomeration Noise Action Plan 2024-2028[97] finds that 23% of Cork urban agglomeration population is exposed to environmental noise values between 55-59 $dBL_{den}$from road traffic noise and 1% to noise from industry (during daytime); 10% of Cork urban agglomeration population is exposed to environmental noise values between 50-54 dBL_{night} from road traffic noise and 1% to noise from industry (during nighttime). According to the Noise Action Plan, assessment of harmful effects should be undertaken above the following thresholds:

- Road traffic noise: 53 dB L_{den}, 45 dB L_{night}
- Railway noise: 54 dB L_{den}, 44 dB L_{night}
- Aircraft noise: 45 dB L_{den}, 40 dB L_{night}

According to the IED (former IPPC) Licensing mentioned in the Cork County Council Noise Action Plan 2024-2028[98] typical limit values of noise caused by industrial activities are: 55 dB LAr,T for daytime, 50 dB LAr,T for evening and 45 dB LAr,T at nighttime, at sensitive locations, from licensed facilities. Alternative limit values are provided for quiet areas and areas of low background noise.

Water and wastewater infrastructure development is not expected to add significantly to noise pollution. Uisce Éireann acknowledges that construction noise can have adverse effects on terrestrial and marine environments and therefore it will be considered through scheme construction management and design for local receptors and during operation for sensitive receptors in close proximity.

[97] Cork County Council. 2025. Cork Agglomeration Noise Action Plan 2024-2028. Accessed: March 2025. Available from:

https://www.corkcity.ie/en/council-services/services/environment/noise/cork-agglomeration-noise-action-plan-2024-2028/

[98] Cork County Council. 2025. Cork County Council Noise Action Plan 2024-2028. Accessed: March 2025. Available from: Noise Action Plan 2024-2028 | Cork County Council

5.17.2 Future Trends

Future noise trends are difficult to predict. The Environmental Noise Regulations 2006 may be revised in future to enforce a stricter level of noise management, and further strategic noise maps and plans are to be developed.

The European Commission Zero Pollution Action Plan (ZPAP) was adopted in 2021. The vision for 2050 under the ZPAP is for air (including noise), water and soil pollution to be reduced to levels no longer considered harmful to health and natural ecosystems. This is translated into key 2030 targets to speed up reducing pollution at source. The target for noise includes reducing the share of people chronically disturbed by transport noise by 30%. This target has not been transposed into Irish legislation, however, may be in the future, and therefore should be considered in future iterations of Noise Action Plans.

A summary of the Most Important Areas (MIA) identified within the Cork Agglomeration using the EPA Guidance density criterion of 15 or more people per 100m^2 concluded that no MIA were identified within the Cork County Council area but 60 MIA were identified within Cork City Council area. Given the number of MIA identified, a process has been undertaken to identify which should be considered a priority (Priority Important Area), for which an assessment of noise mitigation measures will be undertaken within the life cycle of the Noise Action Plan and those deemed justified implemented subject to funding and resources. Cork Agglomeration Noise Action Plan identifies 9 high priority areas where noise mitigation is required in order to comply with the EPA guideline limits for licensed activities[99] and 15 Candidate Quiet Areas.

5.17.3 Key Considerations for CWS and the SEA

The key challenges and opportunities in relation to noise and vibration potentially relevant to the CWS and SEA are:

Challenges and opportunities

- Generation of noise during construction and operation of wastewater infrastructure; and
- Generation of noise from the construction and operation of wastewater treatment, including the disposal of sludge waste, related to the use of plant and HGV movements.
- Opportunities to consider noise and vibration standards in design and procurement where sensitive receptors maybe affected.

In the context of the development of the CWS, the challenges and opportunities related to noise and vibration are considered localised issues to be addressed through the application of appropriate standards at programme and project levels. In terms of the SEA of the CWS they have therefore been considered as potential nuisance or disturbance effects under the topic of population and health and in accordance with the approach set out in the SEA Scoping Report.

5.18 Transboundary Effects

No transboundary effects are anticipated due to the distance involved between the CWS SEA study area and other nations (Northern Ireland approximately 240 km). There are also no shared WFD catchments between the draft CWS and Northern Ireland. Transboundary effects are therefore scoped out of further assessment.

5.19 Interrelated SEA Topics

In accordance with the SEA Directive, it is important to recognise the interrelationships between environmental topics, as changes to one environmental aspect can directly and indirectly influence others.

[99] Environmental Protection Agency (EPA). 2016. Office of Environmental Enforcement (OEE) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4). Accessed: March 2025. Available from: https://www.epa.ie/publications/monitoring--assessment/noise/NG4-Guidance-Note-(January-2016-Update).pdf

Table 5.19 below illustrates the potential interrelationships between the environmental topics discussed in Sections 5.8 to 5.17 which have been considered further as part of the environmental assessment of the draft CWS.

All SEA topics are considered relevant to some degree related to potential positive or negative impacts from the implementation of the CWS.

Table 5.19 Interrelated SEA topics

SEA Topic	Water Environment	PopN, Econ, Rec, Health	Climate Change	Biodiversity	Material Assets	Landscape	Cultural Heritage	Geology and Soils	Air Quality
PopN, Econ, Rec, Health	Y								
Climate Change	Y	Y							
Biodiversity	Y	Y	Y						
Material Assets	Y	Y	Y	Y					
Landscape	Y	Y	Y	Y	Y				
Cultural Heritage	Y	Y	Y	Y	Y	Y			
Geology and Soils	Y	Y	Y	Y	Y	Y	Y		
Air Quality	N	Y	Y	Y	N	N	N	Y	
Noise and Vibration	N	Y	N	Y	Y	N	Y	N	N

6 SEA Methodology

6.1 Assessment Approach

The assessment methodology applied for the SEA of the CWS is based on the approach outlined in the SEA Scoping Report and takes account of comments received through Consultation 1.

The existing baseline conditions, future baseline trends and legal requirements within relevant plans, policies and programmes have shaped the development of the scope and objectives for this assessment.

This Section sets out the SEA methodology applied, noting that Section 2.5 of this report describes how the development of the draft CWS has been influenced through the SEA process.

Key guidance taken into account in the approach to the SEA includes:

- SEA pack including scoping guidance and checklists (updated 2023 and published 2024)[100];
- EPA's Developing and Assessing Alternatives in SEA (published 2015)[101];
- EPA's Guidance on SEA Statements and Monitoring (published 2023)[102];
- EPA's Integrating Climatic Factors into SEA in Ireland – A Guidance Note (published 2019)[103];
- EPA's Good practice guidance on Cumulative Effects Assessment in SEA (published 2020)[104];
- EPA guidance 'The Tiering of Environmental Assessment – The influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment (published 2021)'[105]; and
- Good Practice Guidance Strategic Environmental Assessment in the Water Sector (published 2022).[106]

All other EPA's SEA Topic and Sector Specific Guidance[107] relevant to the development to the CWS have also been used to guide and influence the SEA process.

[100] EPA. 2024. SEA Pack (Updated January 2023). Accessed: September 2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/sea-pack.php

[101] EPA. 2015. Developing and Assessing Alternatives in Strategic Environmental Assessment (SEA). Accessed: September 2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/developing-and-assessing-alternatives-in-sea.php

[102] EPA. 2023. Guidance on SEA Statements and Monitoring. Accessed: September 2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/guidance-on-sea-statements-and-monitoring.php

[103] EPA. 2019. Integrating Climatic Factors into Strategic Environmental Assessment in Ireland - A Guidance Note. Accessed: September 2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/integrating-climatic-factors-into-sea-in-ireland.php

[104] EPA. 2020. Good practice guidance on Cumulative Effects Assessment in SEA. Accessed: September 2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/good-practice-guidance-on-cumulative-effects-assessment-in-sea.php

[105] EPA. 2021. The Tiering of Environmental Assessment – The influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment. Accessed: October 2023. Available from: https://www.epa.ie/publications/research/epa-research-2030-reports/Research_Report_391.pdf

[106] EPA. 2022. Good Practice Guidance Strategic Environmental Assessment in the Water Sector. Accessed: October 2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/good-practice-guidance-water-.php

[107] EPA. n.d. SEA Topic and Sector Specific Guidance. Accessed: March 2025. Available from: https://www.epa.ie/our-services/monitoring--assessment/assessment/strategic-environmental-assessment/sea-topic-and-sector-specific-guidance-/

6.2 SEA Objectives

During the scoping stage of the SEA process a set of SEOs and assessment criteria was developed based on the key considerations from the baseline review and the policy, plan and programme review outlined in Sections 3 and 4. These objectives were consulted on through the SEA Scoping Report and have been amended to reflect comments received. These SEA Objectives have provided the framework for assessing the alternative plan approaches and recommended plan proposals. The SEOs and assessment criteria are provided in Table 6.1Table 6.1.

Table 6.1 SEA Objectives for Draft CWS Assessment

SEA topic	SEA Objectives
Water Environment	*Water quality and quantity* Prevent deterioration of the WFD status of waterbodies with regard to quality and quantity due to discharges of wastewater from treatment plants. Contribute towards the "no deterioration" WFD condition target and restore and improve waterbody status to meet WFD and RBMP objectives related to the provision of wastewater services. *Flood risk* Protect and, where possible, reduce risk from flooding as a result of Uisce Éireann's provision of wastewater services.
Population, Economy, Tourism and Recreation Human Health and Wellbeing	*Population, Economy and Tourism* Protect and contribute to supporting sustainable economic and population growth, with (i) preventing restrictions to recreation and amenity facilities and (ii) protecting and enhancing freshwater and marine fisheries and shellfish protected areas. *Human health and wellbeing:* Protect and contribute to enhancement of human health and wellbeing related to the provision of wastewater services.
Climate Change	*Climate change mitigation* Minimise contributions to climate change emissions to air (including greenhouse gas emissions) through energy efficiency, consideration of ecosystem services including carbon sequestration, water reuse and conservation - related to the provision of wastewater services. *Climate change adaptation* Take account of additional pressures on the environment due to climate change and promote measures supportive of climate change resilience related to provision of wastewater services. Take account of additional risks to wastewater services and infrastructure due to climate change and improve resilience to the effects of climate change such as to extreme weather events.
Biodiversity	Protect and enhance terrestrial, aquatic and soil biodiversity and habitat connectivity, with particular regard for European and nationally designated sites (including proposed and candidate sites and protected species). Achieve BAP commitments to No Net Loss of habitats related to provision of wastewater services.
Material Assets	*Resource use and waste management* Minimise resource use and waste generation from new or upgraded wastewater infrastructure and the management of sludge and residuals from treatment processes. Seek to apply circular economy principles across lifecycle decision making for resources and wastes.

SEA topic	SEA Objectives
	Asset use Minimise impacts on other material assets and infrastructure, and optimise use of existing wastewater assets including through capacity and upgrades of existing wastewater sites.
Landscape, Townscape and Seascape	Protect and enhance designated and valued landscapes/townscapes and seascapes and visual amenity in relation to the provision wastewater services.
Cultural Heritage – Archaeological and Architectural	Protect and enhance designated and undesignated cultural heritage assets and archaeological interest, including their condition, settings and access related to the provision of wastewater services.
Geology and Soils	Protect soils and geological heritage sites and contribute towards the appropriate management of soil quality and quantity related to wastewater services.
Air Quality	Identify and seek to apply wastewater treatment improvements, higher design standards and operation practices to minimise odour from wastewater plants.
Noise and Vibration	Scoped out - as CWS unlikely to have significant effects related to noise and vibration (see Section 5-18) in terms of plan level effects but will need to be part of project level consideration for construction and operation.

6.3 Assessment of Significant Effects

The assessment of the effects that are expected to occur from the implementation of the CWS was based on technical judgement and knowledge of similar schemes. The significance of the effect will be determined based on the sensitivity of the receptor and the scale of the change. Using this method, a sensitive receptor (for example a European designated site) may only require a small change to be considered as a significant effect.

Alternatively, a less sensitive environment may tolerate a larger change and may therefore be judged as a minor or no effect. The effects can be beneficial or adverse as indicated by colour and by the + and – symbol and are shown in Table 6.2. The effects will be assessed both before and after the identification of mitigation. The magnitude of the predicted effect will take into account the likelihood of the effect occurring, the severity of the effect and the spatial extent (i.e. how large an area, or size of population) would be affected.

Table 6.2 Significance of Effect and Assessment Certainty (Option Level Assessments)

Type of effect		Potential significance of effect			
Long term (>15 years)	L	Major beneficial	+++	Major adverse	---
Short term (<5 years)	S	Moderate beneficial	++	Moderate adverse	--
Permanent	P	Minor beneficial	+	Minor adverse	-
Temporary	T	Neutral	0		
Assessment certainty		Low/Medium/High			

Table 6.3 Determination of Significance

Magnitude of impact	Baseline value/sensitivity					
	Low		Medium		High	
Major loss or change to receptor(s)	Minor adverse	-	Moderate adverse	--	Major adverse	---
Moderate loss or change to receptor(s)	Minor adverse	-	Moderate adverse	--	Moderate adverse	--
Minor loss or change to receptor(s)	Minor adverse	-	Minor adverse	-	Moderate adverse	--
No impact or impact does not affect	Neutral	0	Neutral	0	Neutral	0
Minor enhancement to receptor(s)	Minor beneficial	+	Minor beneficial	+	Moderate beneficial	+ +
Moderate enhancement to receptor(s)	Minor beneficial	+	Moderate beneficial	++	Moderate beneficial	+ +
Major enhancement to receptor(s)	Minor beneficial	+	Moderate beneficial	++	Major beneficial	+++

Value/sensitivity of receptors

Low value receptors(s) = locally important and/or resilient to losses and substitution and/or limited capacity for enhancement

Medium value receptor = regionally important and/or with some resilience or capacity to accommodate losses of substitution or enhancement

High value receptor = nationally important and/or with very limited resilience or potential to accommodate losses or substitution or substantial capacity for enhancement

6.4 Consideration of Alternatives

The SEA Directive requires the SEA process to identify and describe 'reasonable alternative' means of achieving the objectives of the CWS. It states under Article 5(1) that;

"Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and **reasonable alternatives** taking into account the **objectives** and the **geographical scope** of the plan or programme, are identified, described and evaluated."

The reasons for selecting (a) the alternatives and (b) the preferred approach for the plan must be documented, together with a description of how this assessment of alternatives was undertaken.

The optioneering process for the CWS includes the following steps:

1. Identification of need
2. Develop long list of unconstrained options;
3. Course screening of unconstrained options to produce short list of constrained options;
4. Fine screening of constrained options to develop short list of options; and

5. Final assessment of short list Feasible Options, combined Feasible Approaches so that Recommended Approaches are identified.

The approach applied for environment assessment of reasonable alternatives is through the integration of environmental considerations through all the option appraisal steps as part of the iterative process of assessing and amending options or excluding options that would not meet need. Then influencing the ranking of feasible short list options and the comparison of feasible approaches and selection of the Recommended Approaches.

6.5 Cumulative Effects Assessment

Cumulative effects can be described as the addition of many small impacts to create one larger, more significant, impact. Cumulative effects can be described as either (Table 6.4):

- Additive effects: the addition of many minor or significant effects to create larger, more significant effects. Therefore, effects that arise, for instance, where several developments (such as multiple options) each have insignificant effects but together have a significant effect; or where several individual effects of the CWS (for example noise, dust and visual) have a combined effect (in-combination effects).
- Synergistic effects: "Where the resultant effect is of greater significance than the sum of its constituents." Synergistic effects often happen as habitats, resources or human communities get close to capacity. For instance, a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes the areas too small to support the species.

Table 6.4 Cumulative Effects Assessment

Key			
Likely to have a positive effects	+	Likely to have a mixed positive and negative effects	+/-
Likely to have a negative effects	-	Likely to have mixed neutral and negative effects	0/-
Effects are uncertain or not applicable	? or N/A	Likely to have mixed neutral and positive effects	0/+
Likely to have a neutral effect	0		

Both intra-plan and inter-plan cumulative effects will be considered within the SEA:

- Intra-Plan cumulative effects – these arise from the interactions between different types of environmental effects resulting from a plan, programme. Interrelationships include for example between air quality and vegetation; human health and flood risk; and ecology and water quality.
- Inter-Plan cumulative effects – these arise when the effects of the implementation of one plan occurs in combination with those of other plans, programmes, or projects. With regard to potential inter-Plan cumulative environmental effects, these occur as a result of the combination of environmental effects which are identified by the assessment and the effects arising from other policies, plans and programmes.

- The plans we have included as part of the inter-plan cumulative assessment are listed below. This list has been updated from the list provided in the SEA Scoping Report to additional local plans and relevant plan updates:
- Climate Sectoral Adaptation Plans (under Ireland's National Adaptation Framework) 2024[108];
- Climate Action Plan 2025[9]
- Cork City Council Climate Action Plan 2024-2029[40];
- Cork County Council Climate Action Plan 2024 - 2029[5656];
- National Adaptation Framework 2024[10];
- Water Quality and Water Services Infrastructure, Climate Change Sectoral Adaptation Plan[11];
- Ireland's 4th National Biodiversity Action Plan 2023-2030[14];
- Cork City Heritage and Biodiversity 2021-2026[67];
- National Development Plan Review 2025[18];
- National Planning Framework First Revision 2025[1];
- Southern Regional Spatial and Economic Strategy[2];
- Cork City Development Plan 2022-2028[109];
- Cork County Development Plan 2022 - 2028[110];
- Groundwater protection Schemes –
- Creating Green Infrastructure for Ireland:
- Healthy Cities Programme (WHO)
- Whole government Circular Economy Strategy and A waste Action Plan for a Circular Economy
- Heritage Ireland 2030
- Cork City, Harbour and East Cork Destination and Experience Development Plan (2024)
- Cork County Local Economic and Community Plan (LECP) 2024-2030
- Cork City's Local Economic and Community Plan (LECP) 2024-2029
- Water Action Plan 2024 (A River Basin Management Plan for Ireland)[6]
- Catchment Flood Risk Assessment and Management (CFRAM) Programme[34];
- National Marine Planning Framework[8];
- Uisce Éireann's Water Services Strategic Plan 2050
- Uisce Éireann's National Wastewater Sludge Management Plan[21];
- Uisce Éireann's Lead in Drinking Water Mitigation Plan[111];

[108] EPA.2024.Sectoral Adaptation Plans. Accessed: March 2025. Available from: EPA Climate Ireland | Sectoral Adaptation Plans

[109] Cork City Council. 2022. Proposed Cork City Development Plan 2022-2028. Accessed: March 2025. Available from: https://www.corkcity.ie/en/proposed-cork-city-development-plan-2022-2028/

[110] Cork County Council. 2022. Cork County Development Plan 2022-2028. Accessed: March 2025. Available from: https://www.corkcoco.ie/en/resident/planning-and-development/cork-county-development-plan-2022-2028

[111] Uisce Éireann. 2016. Lead in Drinking Water Mitigation Plan. Accessed: March 2025. Available from: https://www.water.ie/projects/strategic-plans/lead-mitigation-plan/; https://www.water.ie/sites/default/files/iw-documents/our-projects/Lead-in-Drinking-Water-Mitigation-Plan.pdf

- Uisce Éireann's National Water Resources Plan 2021 and Regional Water Resources Plan – South West[112]; and
- Uisce Éireann's Biodiversity Action Plan[20].

The CWS has been developed in line with Uisce Éireann's own national, regional and local level wastewater plans and programmes and therefore these are not considered as part of the inter-plan assessment.

6.5.1 Assessment of the Recommended Approach for the Draft CWS

The assessment of the draft CWS is summarised through matrices identifying the potential for significant effects against each SEO. The assessment takes planning procedures and legislative protection into account, since they would be implemented regardless of the SEA process. The evidence that has informed the assessment, along with the level of certainty, is also reported.

Recommendations for mitigation to help avoid or reduce the potential impacts or to contribute to achieving objectives will be identified as part of the assessment. An assessment of significance has been recorded with mitigation in place to address how the effects change following implementation of the mitigation recommendations and provide an assessment of residual effects.

The assessment will cover the proposals in the draft CWS comprising:

- Overall approach and alternatives considered in the development of the proposed draft plan;
- Assessment of the draft plan including:
  - Assessment of proposed options for the 2030, 2055 and 2080 design horizons ;
  - Overarching comparative assessment of the proposed draft plan compared to a no plan scenario;
  - Assessment of cumulative impacts of the proposed CWS with other plans and programmes; and
  - Identification of mitigation measures and recommended actions and monitoring requirements for the plan implementation.

[112] Uisce Éireann. 2023. Regional Water Resources Plan – South West. Accessed: March 2025. Available from: https://www.water.ie/projects/strategic-plans/national-water-resources/rwrp/south-west/

7 Assessment of CWS Options and Approach Alternatives

7.1 Approach to assessment of strategy alternatives

The assessment of alternatives options for meeting strategy objectives has been a fundamental part of process for developing the Strategy. Environmental assessment has been undertaken through each stage in the process and this section covers

- The basis for assessing the 'do nothing' or 'without CWS' scenario as the continuation current situation through to 2080.
- The options appraisal process from the development of a long list of unconstrained options addressing WwTP and network performance, resilience and environmental needs through shortlisting options, multi criteria analysis and ranking of options
- Comparison of option combinations within each Sub catchment delivering solution over the 2030, 2055 and 2080 time horizons
- Summary of option and approach environmental assessments compared to the overall assessments and selection of Recommended Approaches.

7.2 Current situation and Do Nothing Scenario

7.2.1 Current and Future WWTP performance

An in-depth assessment of the current treatment capacities has been undertaken for the draft CWS, providing a comprehensive overview of the existing treatment streams and processes at the WwTPs within the CMA. This evaluation includes a high-level performance assessment for each WwTP, focusing on their compliance with current wastewater discharge licences and performance relative to the UWWTD. The assessment serves as a baseline for understanding the current operational status and identifying areas requiring action.

A summary of each site, detailing key information such as design capacity, existing operational issues, and any upgrades that are either in progress or proposed for the future is provided in the draft CWS.

Flow and load analyses were undertaken to understand the current performance and limitations of each WwTP. Recommendations for the draft CWS were development based on current capacities and performance, projected demands, and potential future challenges. The outputs of the assessment are summarised in draft CWS Appendix 3 Wastewater Treatment Plants Flow and Loads Summary Report.

Based on the comprehensive findings from the WwTP assessment and the detailed flow and load analysis, coupled with the population projections (outlined in Section 5), timelines for proposed upgrades were identified. The timelines are crucial in relation to preventing WwTPs from exceeding their operational capacities, which could lead to a deterioration in operational efficiency and treatment quality and resulting impacts on the water environment with related biodiversity, community and economic effects. The results of the analysis of the continuation of the current situation, the Do Nothing scenario, are included in the draft CWS Appendix 3 WwTP Assessment Report. Table 7.1 below summarises the findings and demonstrates the pressures the existing WwTPs will be placed under in a 'Do Nothing' (ie continuation of current situation) scenario and the need for action to be taken in upgrading existing assets to meet future demands.

Table 7.1: WwTP Capacity Requirements and Load Projections (Do Nothing Scenario)

WwTP	Organic Design Capacity (PE)	2030	2055	2080	2030	2055	2080
Carrigrennan	413,200	390,857	465,286	500,415	C	E	E
Cork Lower Harbour	65,000	66,955	81,307	92,431	E	E	E
Ballincollig	33,000	37,755	59,486	67,214	E	E	E
Carrigtwohill	30,000	25,500	28,500	30,500	C	C	C
Midleton*	15,000	27,441	33,969	38,867	E	E	E
Blarney	13,000	13,724	23,640	26,939	E	E	E
North Cobh*	2,000	1,755	2,144	2,454	C	E	E
Watergrasshill	3,000	2,892	3,450	3,871	C	E	E
Whitechurch	3,000	1,091	1,262	1,418	C	C	C
Cloyne*	1,400	3,199	3,813	4,279	E	E	E
Ballygarvan	634	930	1,079	1,212	E	E	E
Kileens**	600	1,550	2,084	2,285	E	E	E
Dripsey	600	628	726	817	E	E	E
Grenagh	1,200	1,042	1,250	1,411	C	E	E
Halfway	450	363	417	470	C	C	E
Carrignavar	300	907	1,104	1,248	E	E	E
Killumney**	260	3,234	3,936	4,417	E	E	E
Courtbrack	250	660	752	836	E	E	E
Minane Bridge	250	426	511	577	E	E	E
Inniscarra Waterworks	100	334	401	455	E	E	E
Ballincurrig	150	567	682	771	E	E	E
Lisgoold North	80	266	324	366	E	E	E
Lisgoold South	500	266	324	366	C	C	C
Knockraha	350	737	841	935	E	E	E
Saleen	40	891	1,032	1,158	E	E	E
Whitegate and Aghada	2,500	3,361	3,959	4,444	E	E	E

* red E – Exceeds Capacity

* green C – Sufficient Capacity

*Denotes there is an ongoing project to increase capacity at WwTP. This table demonstrates existing capacities only and does not account for proposed upgraded capacities.

**Denotes there is an ongoing project to transfer flows from the agglomeration to a separate WwTP for treatment. This table demonstrates existing capacities only and does not account for proposed upgraded capacities

7.2.2 Network Performance– Storm Water Overflows

The draft CWS takes account of the network assessment identifying compliant and non-compliant overflows and their impact on catchments across various strategy horizons based on a Do Nothing approach. The strategy horizons represent the outcomes and impacts if no changes or upgrades to the network are acted upon in the intervening period. It highlights network capacity issues, shown by incremental non-compliant overflows with increasing development in the 2030, 2055, and 2080 scenarios. All SWOs will need to be addressed in accordance with environmental regulations and the recast Urban Wastewater Treatment Directive. A detailed analysis of spill volume, spill frequency, and UWWTR compliance criteria for each SWO is provided in the wastewater Network Modelling Report in draft CWS, Appendix 4. The network SWO assessment identified the worsening scenario of SWO spills should network interventions not be implemented. This will result in declining conditions of the receiving water environment and demonstrates the requirement for upgrading the existing wastewater network to prevent an increase in SWO spills.

7.2.3 Out of Sewer Flood Assessment

A worst-case cumulative catchment assessment has been undertaken of out of sewer flood volumes for the 30-year design storm (including climate change) for the various strategy horizons within the CMA. The strategy horizons represent the outcomes and impacts if no changes or upgrades to the network are acted upon in the intervening period. The results highlight how existing network capacity issues will be exacerbated across all catchments with the proposed development through the strategy horizons of 2030, 2055 and 2080. The draft CWS identifies in Section 8, the potential increase in out-of-sewer flooding incidents if network upgrades are not implemented. This demonstrates the urgent need for wastewater infrastructure improvements to mitigate network flood risks and maintain system efficiency.

7.3 Summary of Options and Approaches assessment

The following subsections set out the process to be followed at each stage of the optioneering process, and summarises the assessment how the SEA was integrated such that environmental considerations are considered throughout. Table 7.2 presents five options and solutions development stages and environmental consideration.

Table 7.2 Development Stages of Option Appraisal

Options appraisal stages	CWS assessment and development	Environmental and sustainability integration in the options appraisal process
Stage 1 Identifying the need	Considering 2030, 2055 and 2080 timelines - understanding current and future treatment and network capacity needs addressing population growth and environmental discharge requirements	Developing an understanding of environmental constraints and opportunities over the over time of the plan taking account of the likely evolution of the baseline environment without the CWS in place. Water Quality Modelling, GIS mapping, site visits and performance information, EPA compliance reports, the baseline environmental data and policy context informed this stage.
Stage 2 Long list of unconstrained options	Wide range of options for WwTP, inter catchment options and network solutions	Consideration of SEA Scoping, AA screening and Issues Paper consultation comments and review of long list options and methodology

Options appraisal stages	CWS assessment and development	Environmental and sustainability integration in the options appraisal process
		development for the environmental assessment. Feedback on opportunities on potential to incorporate NBS and catchment management measures through identification as measures to taken forward in stage 5. (Option Assessments are provided Appendix B)
Stage 3 Coarse Screening of Longlist options	Technical Feasibility assessment followed by initial environmental assessment to remove options not considered technically or environmentally feasible – using a red, green and amber (RAG) scoring and the following criteria: • Resilience • Deliverability/flexibility • Sustainability (environmental and social)	High level environmental assessment part of iterative process to identify issues of concern and where impacts would be difficult to mitigate. In addition the level of uncertainty and need for additional information to inform the next stage assessment were identified and where there was a need to amend options or identify variants to address potential issues. (Option Assessments are provided Appendix B)
Stage 4 Fine screening Shortlisting of options	Multi-Criteria Analysis (MCA) Covering Feasibility, deliverability, resilience, planning, environmental and sustainability, customer and community criteria. These were scored on a 7 point scale and weighted.	The criteria were mapped against the SEA objectives and WSSP objectives and each ultimate 2080 option was scored against the range of criteria as part of the MCA. The SEA objective relevant scoring and ranking of options influenced and was compared to the overall ranking. The highest ranking options were then taken forward as potential feasible approaches for the sub catchment group consideration. (Option Assessments are provided Appendix B)
Stage 5 Final assessment of shortlisted options and option combinations	Potential feasible approaches were compared for the highest ranking 2080 options and considering the implementation steps through 2030 and 2055 to 2080 and the combined sub catchment and inter catchment interaction.	Environmental assessments from stage 4 were used to inform comparison of the Feasible Approach combinations of options. A summary of the key differences between the approaches is provided with their related impacts. The overall Recommended Approach was considered alongside deliverability and cost criteria.

Options appraisal stages	CWS assessment and development	Environmental and sustainability integration in the options appraisal process
		Recommended approaches were then assessed against the SEA objective for each WwTP, including network proposals. In combination and cumulative effects within each sub catchment were assessed and mitigation recommendations to address potential impacts and support meeting SEA objectives were identified. (Option and Approach Assessments are provided Appendix B) These assessments and recommendations were then taken forward for consideration of the overall CWS approach in this SEA Environmental Report.

Each stage and the actions or assessments results are summarised in the sections below and the options assessments are set out in Appendix B in more detail.

7.3.1 Stage 1 Identifying Need

The initial stage of the Optioneering and Strategy Development process for the CMA focuses on comprehending the unique drivers and constraints specific to each wastewater catchment. This included:

- Understanding the current treatment and flow capacity and infrastructure status and WWDL and SWO spill compliance.
- Population projections for three horizon years: 2030, 2055, and 2080. These projections were used to estimate population growth and therefore the flow and loads for each of the study horizon years for each wastewater catchment.
- Future WWDL compliance based on water quality modelling of requirements to meet WFD waterbody ecological status objectives and the environmentally sustainable discharge limits (ESDLs) that need treatment would need to achieve.
- Network and stormwater overflows (SWOs) requirements to bring SWOs into compliance.

7.3.2 Water quality modelling applied

Water quality modelling (draft CWS, Appendix 5) was undertaken as part of the development of the CWS. This comprised determining the current and future assimilative capacity of the relevant freshwater waterbodies and the Cork Harbour Transitional and Coastal waterbodies within the CMA and including climate change scenarios.

For the modelling, each receiving freshwater catchment was assigned a WFD status objective based on upstream water quality and ecological designation: typically High status objectives in predominantly rural headwaters, and Good status objectives downstream of urban centres. Cork Harbour's transitional and coastal waters were are designated Good status objective, with shellfish areas imposing additional nitrogen (Total Inorganic Nitrogen, DIN) and phosphorus (Molybdate Reactive Phosphorus, MRP) limits to safeguard shellfish quality.

Monitoring data from the Environmental Protection Agency's National River Water Quality Network and bespoke intertidal surveys were aggregated to produce flow-normalized statistics (mean and 95th percentile) for BOD, N, and P under low-flow (Q95) and mean-flow conditions.

Hydrological and hydrodynamic modelling was based on each river network model incorporating detailed cross-sectional survey data (OPW and bespoke LiDAR), calibrated against EPA gauging stations (e.g. Meadowbrook on the Glashaboy, Ballea on the Owenboy) over a ten-year record. Flow-duration curves confirm accurate representation of Q95, Q50, and Q10 regimes. ECOLAB parameters (BOD decay rates, nitrification and reaeration coefficients, and nutrient uptake constants) were tuned against seasonal dissolved-oxygen and nutrient transects.

The Cork Harbour model used a flexible-mesh grid with 25 m resolution in estuarine zones expanding to 500 m offshore, incorporating FES tide constituents, wind forcing from buoys, and density forcing from seasonal salinity-temperature surveys. Calibration was to tide gauges and ADCP current profiles. Bathymetry merges hydrographic survey data with DTMs, ensuring accurate stratification simulation in Lough Mahon and the Lee Estuary.

The Water Quality Modelling methodology is set out in detail in the report in the draft CWS Appendix 5 . In summary. For each freshwater WwTP and parameter (BOD, N, and P for) the following actions were taken:

Determine target EQS and upstream condition

The regulatory target (High or Good) was selected based on WFD objectives and measured upstream quality. If upstream concentrations exceed 0.75 × EQS, Notionally Clean (NC) conditions are invoked, setting upstream concentration equal to 0.20 × EQS.

Compute Available Assimilative Capacity (WAC)

The available WAC is calculated as the difference between the EQS threshold concentration and the concentration at the upstream of the WwTP. In the case of using NC condition, 1/5th of the High/Good EQS boundary is used for the upstream condition if there is no WwTP upstream of the WwTP in question.

Allocate percentage of WAC

Based on catchment sensitivity (e.g. distance to next tributary, protected area proximity), a conservative fraction of WAC is assigned to each discharge following Uisce Éireann's scoring tables.

Derive ESDL using modelled concentration increase

The maximum ESDL was determined from the increase in concentration (downstream concentration - upstream concentration) caused by the WwTP calculated by the model; WwTP concentration used in the model; and the allowed WAC to be taken determined in Step 4. The maximum ESDL was calculated as the concentration of the WwTP to cause an increase of concentration of maximum allowed (the allowed WAC to be taken):

Validation

The model was re-run with the proposed ESDLs for both mean and Q95 flows to confirm compliance at all downstream receptors and mixing-zone boundaries.

Marine

For marine WwTP calculations a similar approach was taken for parameter (BOD, ammonia, orthophosphate) taking account of Target status set as High (or Good) based on WFD objectives and upstream quality, available WAC based on the difference between the EQS threshold and upstream concentration (or NC concentration if applied). This was adjusted for Uisce Éireann's percentage-utilisation scoring (based on sensitivity and downstream dilution) to the available WAC. The ESDL calculation identifies the maximum ESDL using the allowed WAC, the change in parameter concentration at the flow percentile using both mean and 95th-percentile low-flow conditions; selecting the more restrictive ESDL. A capping was applied if needed where the predicted ESDL exceeds the existing permit, the permit value was retained. Models were re-run with the newly derived ESDLs to confirm no downstream EQS exceedances. The existing and predicted mixing zones are also calculated. Detailed results of the modelling for the marine WwTPs are provided in the Water Quality Modelling reports in the draft CWS Appendix 5.

Notionally clean

In the freshwater catchments, numerous rivers have an upstream concentration that exceeds the Environmental Quality Standards (EQS). For BOD, these are the Butlerstown, Glashaboy, and Blarney rivers. For ammonia, they are the Glashaboy, Blarney, and Bride (Lee) rivers. For MRP, they are the Butlerstown, Glashaboy, Owenboy, Owenacurra, Blarney, Martin, Shournagh, Bride (Lee), and Dripsey. In these rivers, achieving point-source ESDLs without ecological decline also demands catchment-wide reductions in diffuse loads. Most marine discharges can comply through operational tuning and modest enhancements. Also it should be noted therefore that it is not just wastewater treatment that can facilitate improvements to water quality but actions to reduce pollution from other sources such as agricultural and urban run-off.

The quantified ESDLs enabled the development and prioritisation of the proposed planning horizons of the CWS.

7.3.3 Stage 2 Identifying Unconstrained List

The first stage of the options assessment involved identifying and evaluating an unconstrained list of solutions to meet the identified need, regardless of cost, environmental or social implications

An options long list covered each wastewater agglomeration and design horizon (2030, 2055 and 2080), The unconstrained options considered encompassed a wide range of potential solutions, including inter-catchment approaches, planning area solutions, system operation of assets, catchment measures, system upgrades, and new asset development.

This resulted in a list of generic option types capable of addressing future network and wastewater treatment constraints and provided a starting point for the appraisal process applied to each wastewater catchment.

A "Do Nothing" scenario was included as the counterfactual, providing a baseline against which other options can be compared and this has also been used for considering the evolution of the baseline environment without the CWS.

For the WwTP Assessment, the list of unconstrained options developed is outlined in Table 7.3.

Table 7.3 WwTP Unconstrained List of Options

Option	Description
A0 – Do Nothing	Counterfactual used for screening exercise(s)
A1 - Minimal Upgrade – Process Optimisation	Capital Maintenance/Refurbishment of Assets; Alternative Operation Pattern; Identifying Optimisation Solutions
Option A2 - Reuse Existing Plant and Upgrade (Existing Discharge)	Capacity Upgrade; Additional Treatment Requirements/Alternative Technologies
Option A3 - Reuse Existing Plant and Upgrade (Alternative Discharge)	Capacity Upgrade; Additional Treatment Requirements; Final Effluent Discharge Route to New Outfall
Option A4 – New Treatment Process/Plant Upgrade on Existing Site	Full Capacity Upgrade on Existing Site (where existing assets lifecycle exceeded and requires replacement); May include Additional Treatment Requirements/Alternative Technologies; Existing or New Discharge Location to be identified
Option A5- New Greenfield Site	New WwTP on a new Greenfield Site; May include Additional Treatment Requirements/Alternative Technologies; Existing or New Discharge Location to be identified

Option	Description
Option A6 – Untreated Wastewater Load Transfer Solution	Considers the transfer of untreated wastewater from existing site only i.e. does not include network diversion

A separate unconstrained list of network options is presented in

Table 7.4 below.

Table 7.4 Networks Unconstrained List of Options

Option	Description
1 – Do Nothing	Current situation continued
2 – Storm Separation	Impermeable and permeable contributing area separation from foul and combined network
3 – SuDS (including NbS)	Managing runoff to minimise the impacts on the network and local watercourse whilst maximising the benefits of amenity (including local authority actions)
4 – Infiltration/Tide Separation	Separating soil store infiltration and tidal ingress from the combined and foul network to reduce the burden on SWO discharge and WwTP treatment.
5 – Conveyance/Network Capacity	Upgrade existing network to increase capacity within the network
6 – System Optimization	Optimize the existing network and ancillaries with robust RTC arrangements, pump controls and hydrobreaks.
7 – Flow Transfer	Utilize capacity by connecting and transferring flow between catchments and subcatchments.
8 – Online Storage	Upsizing existing network /asset to retain flow back in network and reduce downstream impact.
9 – Offline Storage	Additional storage volume is proposed to temporarily retain flows, allowing for controlled discharge back into the network via gravity, with a limited discharge rate or pump return mechanism.

A total of **714 Unconstrained Options** were identified for WwTPs. The options were then refined through the Coarse and Fine Screening stages (stages 3 and 4).

7.3.4 Stage 3 – Coarse Screening of Long List of Options

This stage involved evaluation of options, considering several key factors: resilience, deliverability, flexibility and sustainability/environmental.

Environmental criteria were incorporated into the coarse screening considering Strategic Environmental Assessment (SEA) objectives and Habitats Directive Appropriate Assessment (AA) requirements. Environmental considerations included the characterisation of the baseline environment and likely trends over the plan period and the modelling of water quality ESDL requirements for existing and potential discharge locations. The approach aimed to identify options could support WFD waterbody objectives and comply with expected discharge requirements. This stage also and aimed to identify options likely to have significant environmental impacts with limited potential for mitigation so that these were not taken forward.

The assessment undertaken for coarse screening provided a basis for supporting the next stage of the assessment for example to identify additional options/variants/amendments for consideration, identify uncertainty where further information would be required.

Technical and Environmental Screening

Options were evaluated to first screen in terms of the technical feasibility, considering factors such as engineering viability, technological requirements, and implementation challenges. Then the remaining options were subject to an environmental screening.

The aim for environmental assessment at coarse screening was therefore to identify:

- options that should not be considered further as environmental impacts were expected to significant and potential for mitigation limited.
- amendments to options that could address environmental impacts
- uncertainty and the information required to address this to assess the potential effects of the options further as preparation for the next stage.

The impacts on protected habitats, water quality, biodiversity, and compliance with environmental regulations were the key areas considered at this first stage with limited option information. This approach aimed to ensure that environmental considerations are integrated early in the decision-making process, aligning with SEA and AA principles while identifying potentially environmentally sustainable options for further evaluation. Table 7.5 below sets out the RAG scoring applied for each option for Environmental Coarse Screening.

All Unconstrained Options are evaluated using a Red-Amber-Green (RAG) matrix (environmental assessment of the technically screened in options.

Table 7.5 Environmental Coarse screening RAG

N	No – not acceptable/high risk - as not addressing the need/ clearly conflicting with objectives and unlikely to be addressed through mitigation
Y	Yes – likely to be acceptable/ low risk- take forward for further consideration
Y	Amber – possible/ uncertain/moderate risk some issues or more information required
Y*	Amber – considered but discounted after further assessment
N/A	Not applicable – not environmentally assessed

Following the initial screening process, options receiving green and amber scores advance to the next stage of fine screening for further evaluation. Conversely, options scored as during the coarse screening process are deemed non-viable and are consequently removed from further consideration at this stage.

237 Constrained options progressed to fine screening.

The Optioneering report (draft CWS, Appendix 6) notes that for the 2030 and 2055 time scenarios shorter term options such as A1, A2 and A3 tended to be favoured while the 2080 scenario favoured options A4, A5, and A6. This analysis highlighted the need for adaptive strategies that can meet both immediate needs and long-term sustainability goals in wastewater treatment infrastructure development.

7.3.5 Stage 4 Fine Screening

This stage involved a more comprehensive desktop assessment of the options passed through Coarse screening. The primary tool used in this process was Multi Criteria Assessment (MCA).

The objective of MCA and Fine Screening is to determine potential benefits and impacts of options across key criteria, enable comparison of multiple factors simultaneously, and assess options relative to each other. This approach allows for a holistic evaluation. The comprehensive nature of this process requires a more in-depth analysis of each option, examining their potential benefits and impacts against the established key criteria.

Fine Screening is a desktop assessment of options that have passed initial Coarse Screening. This is based on a Multi Criteria Assessment (MCA) approach to evaluate a range of potential benefits and impacts across key criteria. The MCA process:

- Allows simultaneous consideration of multiple issues;
- Enables relative assessment of options; and
- Indicates comparative cost-effectiveness, environmental impacts and benefits, promotability, resilience, and feasibility.

The MCA process is based on the Uisce Éireann Multi-Criteria Analysis Model for Wastewater (AMS-AMT-FM-038 methodology, which has been customised to provide a structured and transparent approach, inform the decision-making process, and minimize subjectivity to the extent possible. The Criteria scoring description and weightings can be found in draft CWS Appendix 6.

MCA criteria and fine screening considerations are presented in Table 7.6.

Table 7.6 MCA criteria and Fine Screening Considerations

Objectives	Sub-Criteria	Fine Screening Considerations (SEA objective related criteria highlighted green}
Addressing the Need	Treatment Capacity	Uisce Éireann supports social and economic growth through the provision of wastewater services and is committed to optimising treatment and storage capacity to cater for planned growth in line with the National Planning Framework and subject to constraints.
	Network Capacity	Uisce Éireann supports social and economic growth through the provision of wastewater services and is committed to providing network connectivity to cater for planned growth in line with the National Planning Framework and subject to constraints.
	Final Effluent Compliance	Compliance of the wastewater treatment process under the new requirements under recasted UWWTD Regulations and Wastewater Discharge Authorisation Regulations is assessed.
Deliverability	Design Complexity, Ease of Implementation & Feasibility	*Design Complexity*: Does the proposed option require significant future studies (feasibility, site investigation, planning and infrastructure modification)? Is the proposed option a commonly installed/implemented solution? *Ease of Implementation*: Can the proposed be implemented safely and feasibly without the requirement of complex construction activities and community/environmental interaction? *Feasibility*: Is the proposed option feasible to install - is there sufficient land availability and site suitability to improve feasibility and implementation of the proposed option?
	Planning & Regulation	A measure of the satisfaction of relevant legislations and legal requirements in order to ensure success in the planning

Objectives	Sub-Criteria	Fine Screening Considerations (SEA objective related criteria highlighted green}
		phase. Are there constraints around land ownership, type and availability? Consideration of: zoning, land ownership, land contamination, environmental zoning and constraints proximity, planning policies and objectives, planning consent route, planning history, designations and flood zones.
	Delivery Timeline & Alignment	Alignment: A measure of the synergy with UÉ's broader investment portfolio; and synergies between different assets and processes that UÉ use. Does the option utilise existing technologies and systems? Are there other synergies with other interventions, undertaken by Uisce Éireann for example sludge treatment and resource recovery initiatives.
Risk & Resilience	Flexibility & Scalability	Prioritise a flexible approach to enable UÉ to adapt its approach to project delivery to evolving needs. Is it possible to adapt/scale the option once delivered to meet any future changes? Does the option allow phased or incremental delivery of the intervention?
	Delivery Risk	There are benefits associated with a simple and safe approach to construction and operation, in order to ensure successful construction and delivery phases of projects. This criterion considers if there are construction uncertainties due to land stability or contamination risk, risk to disruption of other Uisce Eireann operations and the complexity of the solution.
Customer and Stakeholder Support	Impact on Customers	The collection, storage and treatment of wastewater has the potential to have a negative impact on customer well-being and experience. Does the option create any barriers in relation to proximity to populated areas, odour, noise and aesthetics? Are new community benefits provided?
	Community Support, Health and Wellbeing	The impacts of UÉ investments on local communities, as well as the public perception of the investment e.g., broad-based public endorsement, extensive stakeholder collaboration, or added community amenities). The health and other impacts of UÉ investments on local people including improving community health, safety, and wellbeing, addressing major risk factors or providing robust

Objectives	Sub-Criteria	Fine Screening Considerations (SEA objective related criteria highlighted green}
		enhancements to local living conditions and public facilities including to Shellfish Waters or Bathing Waters.
Environmental & Sustainability	Water Environment	Prevent deterioration of the WFD status of waterbodies regarding quality and quantity due to discharges of wastewater from treatment plants. Contribute towards the "no deterioration" WFD condition target and restore and improve waterbody status to meet WFD and RBMP objectives. Consider if flood risk to property is increased due change to base river flows.
	Waterbody Impact	
	Waterbody Flood Risk	
	Biodiversity	Consider how option protects and enhances terrestrial and aquatic biodiversity and habitat connectivity, with regard for Natura 2000 sites and nationally designated sites and protected species. Does option support Biodiversity Action Plan (BAP) commitments to achieving Biodiversity Net Gain minimising loss of habitat and optimising benefits.
	AA-Natura 2000 Sites	
	Aquatic Biodiversity	
	Terrestrial Biodiversity (BNG)	
	GHG Emissions	Considering all carbon aspects—construction materials (embodied), ongoing operations (energy, chemicals), and total lifecycle—does this option increase or decrease overall GHG emissions relative to today's baseline? Uisce Eireann's key sustainability targets: 51% absolute reduction in GHG emissions by 2030, Net Zero Carbon by 2040, 40% energy demand met by installed renewables by 2035.
	Embodied Carbon	
	Operational Carbon	
	Whole Life Carbon	
	Energy Efficiency	Uisce Eireann have a 50% energy efficiency improvement target in the delivery of services by 2030. This criterion shall be used to assess the energy efficiency of proposed option noting that this does not result in a net reduction of energy consumption but an improvement in the use of energy.
	Climate Resilience	Uisce Éireann should ensure a climate-resilient wastewater service by identifying and assessing climate risks and implementing physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to wastewater services, assets and their surrounding areas.
	Circular Economy	Uisce Éireann has the opportunity to contribute to carbon neutrality and circular economy by optimising the re-use of materials. This includes energy recovery and nutrient recovery from wastewater treatment for use. This also includes the re-use of construction materials. Does the option promote circular economy principles (material reuse, energy recovery, nutrient recycling)? Is waste minimized? Does the option contribute to carbon neutrality?

SEA objectives and how they relate to the fine screening categories are mapped in Table 7.7. In addition a cross check against the overarching Water Services Strategic Plan (WSSP) 2050 objectives and strategic aims was undertaken with the relevant objectives included in Table 7.7.

Table 7.7 Fine Screening MCA Environmental Assessment Criteria and SEA Objectives

Fine Screening Objectives	Fine Screening Criteria Category	Fine Screening Criteria Sub-Category	Relevant SEA Objectives	WSSP 2050 Objectives
Addressing the Need	Treatment Capacity Network capacity Final Effluent Compliance		Population, economy, tourism Water environment	Support our Customers, Communities & the Economy. Protect and Restore the Environment
Deliverability: Considering feasibility of proposed option, planning constraints and delivery aspects and alignment with UÉ objectives	Planning & Regulation	Flood risk zones (risk to option) Conflict with existing/planned uses eg recreation, landscape, Archaeological Architectural, Geological designations	Water Environment-flood risk Material Assets Cultural Heritage Landscape Geology and soils Population, economy, tourism and recreation	Support our Customers, Communities & the Economy
Customer and Stakeholder Support: What is the overall impact on customers (positive or negative) and how does the option support the community and reciprocate support for the	Impact on Customers	Odour, Nuisance issues	Population, Economy, Tourism and Recreation Human Health Air Quality	Support our Customers, Communities & the Economy
	Community Support, Health and Wellbeing	Bathing waters Shellfish Waters	Population, Economy, Tourism and Recreation, Human Health	Support our Customers, Communities & the Economy.

Fine Screening Objectives	Fine Screening Criteria Category	Fine Screening Criteria Sub-Category	Relevant SEA Objectives	WSSP 2050 Objectives
option/Uisce Éireann.				Protect and Restore the Environment
Environmental & Sustainability: What are the overall environmental and sustainability benefits or disbenefits of the option? Considering a wide range of E&S factors such as water environment, biodiversity, GHG emissions, energy efficiency, climate resilience and circular economy.	Water environment	Waterbody Impact (Existing and New (if applicable))	Water Environment	Protect and Restore the Environment
		Waterbody Flood Risk (risk change from option)	Water Environment	Protect and Restore the Environment
	Biodiversity	AA-Natura 2000 Sites	Biodiversity	Protect and Restore the Environment
		Aquatic Biodiversity	Biodiversity	Protect and Restore the Environment
		Terrestrial Biodiversity (BNG)	Biodiversity	Protect and Restore the Environment
	GHG Emissions	Embodied Carbon	Climate Change mitigation	Sustainable Services Fit for the Future
		Operational Carbon	Climate Change mitigation	Sustainable Services Fit for the Future
	Energy Efficiency	-	Linked to Climate Change mitigation	Sustainable Services Fit for the Future
	Climate Resilience	-	Climate Change adaptation	Sustainable Services Fit for the Future

Fine Screening Objectives	Fine Screening Criteria Category	Fine Screening Criteria Sub-Category	Relevant SEA Objectives	WSSP 2050 Objectives
	Circular Economy	-	Population/ Economy Climate change mitigation Material Assets	Sustainable Services Fit for the Future

The scoring used a seven-point Likert scale, ranging from -3 to 3 for each criterion. This scale provides a nuanced approach to evaluation, allowing for an assessment of both positive and negative aspects of each option. The scoring system provides a quantitative basis for comparison alongside qualitative assessments and expert judgment to provide a holistic evaluation of each option.

Options which initially passed the coarse screening stage could still be eliminated or amended during fine screening where the more thorough assessment revealed specific issues or unsuitability.

Where options performed poorly against specific criteria, the potential for design modifications or mitigation measures to address these shortcomings was considered. This supported the iterative process and allowed options modification including to address environmental impacts to be identified through the assessment process. High-scoring options from the fine screening process were subsequently advanced for further scrutiny in the final assessment of the feasible approaches.

The results for the fine screening environmental assessments and overall assessments are presented in Appendix B for each of the WwTP agglomerations.

Fine Screening process produced **211 Feasible Options** for the WwTPs in the CMA.

7.3.6 Fine Screening assessment results

This MCA assessment scoring results for each of the WwTP Sub catchments are presented in Appendix B. This identified options that scored best overall under all of the objectives as well as options that scored best under Environmental & Sustainability objective only (Table 7.8). The assessment was undertaken on the 2080 time horizon option. Options for the 2030 and 2055 periods were determined as a next step in terms of best options to select to support the ultimate 2080 option.

Table 7.8 highlights where an option was scored as both best environmentally (Environmental & Sustainability objective) and best overall (all of the objectives) in blue. Where different option scored as best environmentally (Environmental & Sustainability objective) these are highlighted green and the best overall (all of the objectives) is yellow. The highest ranking options were then taken forward into Feasible Approaches for further assessment also taking into account the interim time horizon options 2030 and 2055. The Feasible Approaches compared in some cases included a combination of the 1st, 2nd and 3rd highest scoring options but at different horizons. Table 7.8 provides a summary of how the 2080 options were compared as a starting point for developing the Feasible Approaches and provides a reason for selection of the highest ranked options and identifies the relevant Feasible Approach for each options.

Key					
Best overall & environmental option		Best environmental option		Best overall option	

Table 7.8 Fine screening 1st, 2nd and 3rd ranked options for the 2080 time horizon.

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
Sub Catchment 1	Blarney WwTP	Option A6: Wastewater load transfer to Carrigrennan (dedicated pipeline) **Taken forward into Feasible Approaches 1, 2 and 3.**	Option A4: New treatment process/plant upgrade on existing site with new discharge location (River Lee). Taken forward into Feasible Approaches 2 and 3.	Option A5: New greenfield site with new discharge (River Lee). Not taken forward into Feasible Approaches.	Best environmental and overall score including removal of discharge from river and addressing network issues. Benefiting approx. 10 km of High Status Objective river downstream.
	Courtbrack WwTP	Option A6: Wastewater Load Transfer to Carrigrennan via Blarney (Dedicated Pipeline to Blarney TPS). Taken forward into Feasible Approach 2.	Option A4: New Treatment Process/Plant Upgrade on Existing Site. Taken forward into Feasible Approaches 1 and 3.	Option A5: New Greenfield Site with Existing Discharge. Not taken forward into Feasible Approaches.	Option A6 was not taken forward in the later stage and not part of the final Recommended Approach due to cost. Option A4 (an upgrade to accommodate existing loading and future projected loading to 2080) was taken forward as part of Feasible Approach 1.
	Dripsey WwTP	Option A4: New treatment process/plant upgrade on existing site (existing discharge location). **Taken forward into Feasible**	Option A6: Wastewater load transfer to Carrigrennan via Inniscarra & Blarney. Taken forward into Feasible Approach 2.	Option A5: New greenfield site with existing discharge. Not taken forward into Feasible Approaches.	Best environmental Option A6 included option to remove a discharge from a High Status river. Option A4 overall best as most cost effective

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
		Approaches 1 and 3.			maximising the reuse of existing assets recently installed at Dripsey.
	Inniscarra WwT30,000P	Option A6: Wastewater Load Transfer to Carrigrennan via Inniscarra & Blarney. Taken forward into Feasible Approaches 1, 2 and 3.	Option A4: New Treatment Process/Plant Upgrade on Existing Site. Not taken forward into Feasible Approaches.	N/A	Best overall and environmental score providing greater sustainability and water environment protection benefits by removing the discharge from the waterbody whilst reducing community impact.
Sub catchment 2	Kileens WwTP	Option A6: Wastewater Load Transfer to Carrigrennan via Cork City. Taken forward into Feasible Approaches 1, 2 and 3.	Option A5: New Greenfield Site with New Discharge Location at River Lee. Not taken forward into Feasible Approaches.	N/A	Best overall and environmental score as its most cost-effective whilst removing discharge from river and addressing network issues. Benefiting approx. 15 km of Good Status Objective river downstream.
Sub Catchment 3	Carrignavar WwTP	Option A6: Wastewater Load Transfer to Carrigrennan via Whitechurch.	Option A4: New Treatment Process/Plant Upgrade on Existing Site with new discharge location.	Option A5: New Greenfield Site with New Discharge location (River Glashaboy).	Best environmental and overall score due to its more cost-effective implementation and better alignment with the goals of the CWS and UÉ

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
		Taken forward into Feasible Approach 1.	Taken forward into Feasible Approaches 2 and 3.	Not taken forward into Feasible Approaches.	whilst removing discharge from river and addressing network issues. Benefiting approx. 11 km of Good Status Objective river downstream.
	Grenagh WwTP	A6: Untreated Wastewater Load Transfer to Carrigrennan WwTP via Whitechurch WwTP. Taken forward into Feasible Approaches 1 and 2.	A4: New Treatment Process/Plant Upgrade on Existing Site (River Martin). Taken forward into Feasible Approach 3.	A5: New Greenfield Site with New Discharge (River Martin). Not taken forward into Feasible Approaches.	Best environmental and overall score and includes removing of discharge from river and addressing network issues. Benefiting approx. 23 km of Good Status Objective river downstream.
	Whitechurch WwTP	A6: Wastewater Load Transfer to Carrigrennan via Cork City Network. Taken forward into Feasible Approaches 1, 2 and 3.	A1: Minimal Upgrade - Process Optimisation. Not taken forward into Feasible Approaches.	N/A	Best environmental and overall score including Community Support, Health and Wellbeing benefits.
Sub Catchment 4	Knockraha WwTP	A6: Wastewater Load Transfer to Carrigrennan via Glanmire.	A4: New Treatment Process/Plant Upgrade on Existing Site – Existing Discharge.	A4: New Treatment Process/Plant Upgrade on Existing Site – Alternative Discharge	Best environmental and overall score as most cost-effective whilst removing discharge from

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
		Taken forward into Feasible Approaches 1, 2 and 3.	Taken forward into Feasible Approaches 1, and 2.	(Butlerstown River). Taken forward into Feasible Approach 3.	river and addressing network issues. Benefiting approx. 8 km of High Status Objective river downstream.
	Watergrasshill WwTP	A6: Wastewater Load Transfer to Carrigrennan via Cork City Network. Taken forward into Feasible Approaches 1, 2 and 3.	A5: New Greenfield Site with New Discharge (Butlerstown River). Taken forward into Feasible Approaches 2 and 3.	N/A	Best environmental and overall score as most cost-effective whilst removing discharge from river and addressing network issues. Benefiting approx. 46 km of Good Status Objective river downstream.
Sub Catchment 5	Carrigrennan WwTP	A4: New Treatment Process/Plant Upgrade on Existing Site. Taken forward into Feasible Approaches 1, 2 and 3.	A5: New Greenfield Site (existing discharge). Not taken forward into Feasible Approaches.	N/A	Best overall and environmental score as upgrades will bring discharge into compliance, its implementation is more cost-effective and it aligns better with the goals of the CWS and UÉ.
Sub Catchment 6	Ballygarvan WwTP	Option A6: Wastewater load transfer to Cork Lower Harbour WwTP via Carrigaline PS.	Option A4: Upgrade existing site and discharge to existing location.	N/A	Best environmental and overall score and removes discharge from river and addressing network issues.

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
		Taken forward into Feasible Approaches 1 and 3.	Taken forward into Feasible Approach 2.		Benefiting approx. 6 km of Good Status Objective river downstream.
	Halfway WwTP	Option A6: Wastewater load transfer to Cork Lower Harbour WwTP via New Ballygarvan TPS. Taken forward into Feasible Approaches 1 and 2.	Option A5: New Greenfield Plant (existing discharge). Not taken forward into Feasible Approaches.	Option A1: Do Minimum - Process Optimisation. Taken forward into Feasible Approaches 1, 2 and 3.	Best environmental and overall score and removes discharge from river and addressing network issues. Benefiting approx. 15 km of Good Status Objective river downstream.
	Minane Bridge (River Valley) WwTP	Option A6: Untreated Wastewater Load Transfer to Cork Lower Harbour WwTP via Carrigaline. Taken forward into Feasible Approaches 1 and 3.	Option A5: New Greenfield Plant with Existing Discharge. Not taken forward into Feasible Approaches.	N/A	Best environmental and overall score as it offers better alignment with the goals of the CWS and UÉ whilst removing discharge from river and addressing network issues. Benefiting approx. 2 km of Good Status Objective river downstream.
Sub Catchment 7	Ballincollig WwTP	Option A5: New Greenfield Plant w/ Existing Discharge.	Option A4: Existing Plant Upgrade w/ New Discharge (Cork Lower Harbour Outfall).	N/A	Best overall score reflects the decommissioning of the current works and construction of a new plant with

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
		Taken forward into Feasible Approach 1.	Taken forward into Feasible Approach 2.		tertiary treatment. Best environmental score due to the continued use of the existing infrastructure and the removal of the river discharge with a transfer to Cork Lower Harbour (24 km pipeline construction impact but with river and community benefits)
Sub Catchment 8	Cork Lower Harbour WwTP	Option A4: New Treatment Process on Existing Site with Existing Discharge Location. Taken forward into Feasible Approaches 1, 2 and 3.	Option A5: New Greenfield Plant with New Discharge Location. Not taken forward into Feasible Approaches.	N/A	Best overall and environmental score ensuring plant at existing site continues to be WWDL compliant in the future.
Sub Catchment 9	Carrigtwohill WwTP	Option A4: New Treatment Process on Site w/ Extended Discharge Beyond Slatty Waters. Taken forward into Feasible Approach 1	Option A4: New Treatment Process on Existing w/ Existing Discharge. Not taken forward into Feasible Approaches.	N/A	Best environmental and overall score due to move of the current discharge approximately 3.5km downstream in order to protect

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
		(only approach).			sensitive habitats.
	Midleton WwTP	Option A6: Wastewater Load Transfer Solution (to Carrigtwohill WwTP). Taken forward into Feasible Approach 1 (only approach)	Option A4: New Treatment Process/Plant Upgrade on Existing Site (existing discharge location). Not taken forward into Feasible Approaches.	N/A	Best environmental and overall score due to more cost-effective implementation, removing discharge from WFD Moderate Status marine waterbody in proximity to Natura 2000 sites and a pNHA.
Sub Catchment 10	Cloyne WwTP	A4: New Treatment Process on Site w/ New Discharge Location with New Marine Outfall. Taken forward into Feasible Approaches 1 and 3.	A6: Wastewater Load Transfer to Whitegate-Aghada. Taken forward into Feasible Approach 2.	N/A	Best overall score due to its more cost-effective implementation. Best environmental score due to removal of discharge to benefit approximately 2.7km of Good Status river.
	Saleen WwTP	Option A6: Wastewater Load Transfer to Cloyne WwTP. Taken forward into Feasible Approaches 1 and 3.	Option A6: Wastewater Load Transfer to Whitegate & Agahda WwTP. Taken forward into Feasible Approach 2.	Option A5: New Greenfield Site With Existing Discharge Location. Not taken forward into Feasible Approaches.	Best overall score due to its more cost-effective implementation and better alignment with the goals of the CWS and UÉ. Best environmental score due to the discharge

Sub catchment	Agglomeration	1st Ranked Option for 2080	2nd Ranked Option for 2080	3rd Ranked Option for 2080	Reason for highest ranking for 2080
					transfer to the marine discharge at Whitegate & Aghada as it's a large coastal waterbody with large dilution effects.
	North Cobh WvTP	Option A6: Untreated Wastewater Load Transfer to Cork Lower Harbour WwTP via existing Cobh wastewater network. Taken forward into Feasible Approaches 1, 2 and 3.	Option A4: New Treatment Process on Current Site Not taken forward into Feasible Approaches	Option A5: New Greenfield Plant Not taken forward into Feasible Approaches	A6 ranks first against the fine screening criteria for the 2080 horizon and is more cost-effective to implement than Options A4 and A5
Sub Catchment 11	Lisgoold South WwTP	Option A2: Reuse Existing Plant and Upgrade with the Existing Discharge. Taken forward into Feasible Approaches 1, 2.	Option A5 New Greenfield Site utilising the existing discharge location. Not taken forward into Feasible Approaches.	N/A	Best overall and environmental score due to its more cost-effective implementation and better alignment with the goals of the CWS and UÉ whilst ensuring future compliance of the treated wastewater.

7.3.7 Stage 5 Assessment of Feasible Approaches

Building on the outcomes of the MCA, optimisation of options for each agglomeration were considered to develop feasible approaches across the whole strategy period. The shortlisted feasible approaches were further evaluated within their broader strategic context, with a particular focus on deliverability, alignment with long-term objectives, and integration with existing infrastructure. The environmental performance on

key issues highlighted through the earlier assessment stages was also considered. This stage aimed to produce Feasible Approaches, which could be further assessed and compared.

Recognising the significance of interactions and interdependencies among all individual catchments within the CMA, the highest ranking WwTP options were considered within the context of smaller, interconnected sub-catchments. Figure 7-1 below demonstrates an indicative example of how the Recommended Approach is determined (Note that this is for demonstration purposes only and does not signify the results of the optioneering process).

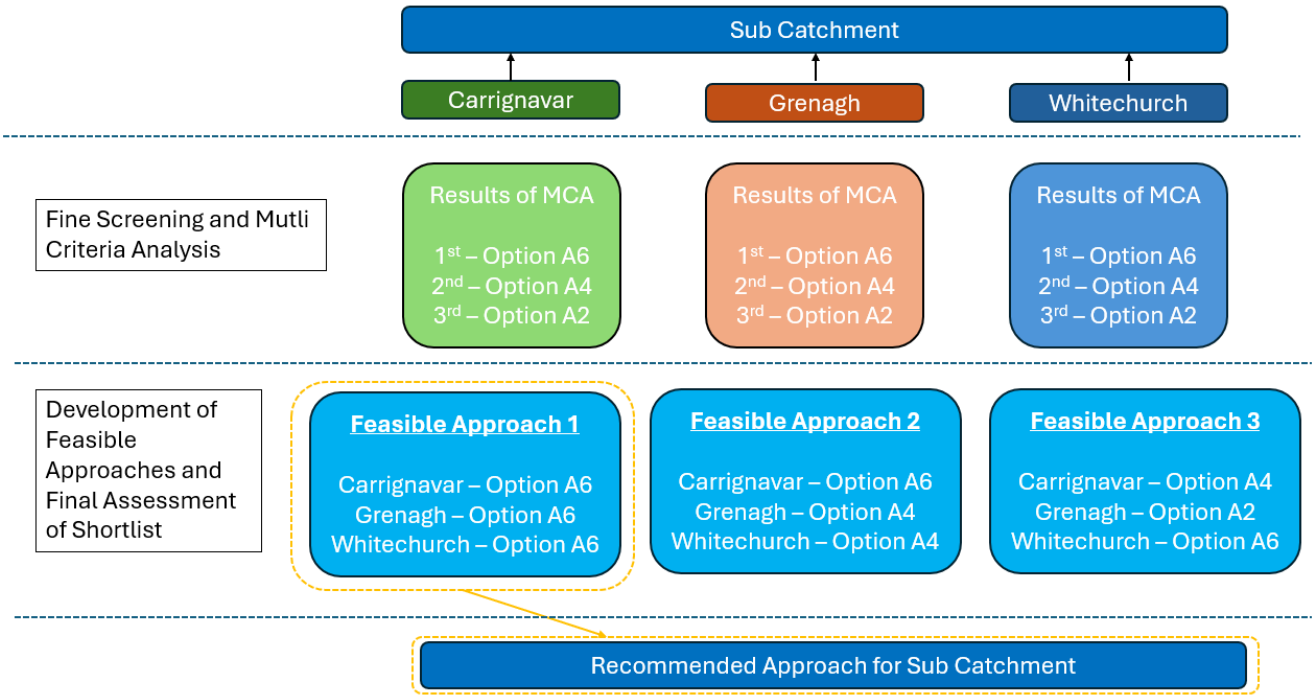

Figure 7-1 Indicative Development of Feasible Approaches and Recommended Approach

The combination of Recommended Approaches for each sub catchment comprises the overall Recommended Approach for the CWS.

As the process advanced to the project level, each aspect underwent further refinement and development. This comprehensive evaluation, incorporating construction and operational cost estimates alongside qualitative and quantitative environmental assessments, forms the basis for selecting the Recommended Approach.

7.3.8 Stage 5 Feasible Approach Assessment results

Table 7.9 through to Table 7.19 present Feasible Approach comparisons within the Sub-catchments. The tables summarise the assessment for the Feasible Approaches considering the combined options proposed across all three horizons 2030, 2055 and 2080 and performance within the context of the whole sub-catchment. Where the environmental and the overall assessment including technical, deliverability and cost both identify the approach as the best approach these are highlighted blue. Where they differ these have highlighted green for best environmental and yellow for best overall. The selected Recommended Approach is identified at the end of each sub catchment table with the justification for its selection.

Key					
Best overall & environmental approach		Best environmental approach		Best overall approach	

Table 7.9 Feasible Approaches for Sub catchment 1

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Blarney WwTP	2030	Option A1: Optimise WwTP to bring to compliance.	Option A4: Upgrade WwTP by 2,000 PE. Option A6: Construct Final Effluent Transfer to Carrigrennan WwTP via Ballyvolane PS (26km).	Option A4: Upgrade WwTP by 1,100 PE. Option A6: Construct Final Effluent Transfer to Carrigrennan WwTP via Ballyvolane PS (26km).
	2055	Option A6: Decommission WwTP. Construct Final Effluent Transfer to Carrigrennan WwTP via Ballyvolane PS (26km).	Option A4: Upgrade WwTP by additional 10,500 PE.	Option A4: Upgrade WwTP by additional 10,000 PE.
	2080	Continue to operate WwPS.	Option A4: Capital replacement of 13,000 PE of WwTP with further upgrade of 4,000 PE.	Option A4: Capital replacement of 13,000 PE of WwTP with further upgrade of 3,400 PE.
Courtbrack WwTP	2030	Option A4: Upgrade WwTP by additional 600 PE utilising existing discharge.	Option A6: Decommission WwTP and transfer to Blarney WwTP (10.5km).	Option A4: Upgrade WwTP by additional 600 PE utilising existing discharge.
	2055	Continue to operate WwTP.	Continue to operate WwPS.	Continue to operate WwTP.
	2080	Option A4: Capital replacement of 250 PE of WwTP.	Continue to operate WwPS.	Option A4: Capital replacement of 250 PE of WwTP.
Dripsey WwTP	2030	Optimise WwTP for additional 60 PE.	Optimise WwTP for additional 60 PE.	Option A4: Upgrade WwTP by additional 700 PE utilising existing discharge.
	2055	Option A4: Upgrade WwTP by an additional 250 PE utilising existing discharge.	Option A6: Decommission WwTP and transfer to Blarney WwTP via Inniscarra (6.7km).	Continue to operate WwTP.

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
	2080	Continue to operate WwTP	Continue to operate WwPS.	Continue to operate WwTP.
Inniscarra WwTP	2030	Option A6: Decommission WwTP and transfer to Blarney WwTP (5.9km) and associated PS.	Option A6: Decommission WwTP and Transfer to Blarney WwTP (5.9km) and associated PS.	Option A6: Decommission WwTP and transfer to Dripsey WwTP (6.7km) and associated PS.
	2055	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwPS.
	2080	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwPS.
Overall recommended approach		Recommended Approach Overall ranked 1st as best deliverability and lowest cost. Environmentally similar to Approach 3 but slightly smaller pipeline construction impacts and later Blarney discharge removal.	Overall highest cost. Environmentally ranked 1st due to earlier decommissions of WwTPs and greater length of river benefiting long term from removal of discharges from 4 WwTPs. Transfer is to marine environment but with benefits of Quaternary treatment. Greater short term pipeline construction impacts.	Environmentally this approach is ranked 2nd with slightly greater pipeline transfer construction impact to Approach 1 but benefits from earlier Blarney discharge removal. All discharges meeting WFD requirements and further river ecology benefits.

Table 7.10 Feasible Approaches for Sub catchment 2

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Kileens WwTP	2030	Option A6: Decommission Existing WwTP. Construct Untreated Transfer to Cork City Network at Northpoint Business Park and associated PS.	Option A6: Decommission Existing WwTP. Construct Untreated Transfer and connect to Blarney Untreated Transfer to Ballyvolane PS.	Option A6: Decommission Existing WwTP. Construct Untreated Transfer to Cork City Network at Northpoint Business Park.
	2055	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwPS.
	2080	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwPS.
Monard WwTP	2030	Option A6: Construct untreated wastewater transfer	Option A6: Construct untreated wastewater transfer	Option A5: Construct new WwTP (5,000PE). Construct

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
		and associated PS to connect to Blarney untreated wastewater transfer to Ballyvolane PS.	and associated PS to connect to Blarney untreated wastewater transfer to Ballyvolane PS.	final effluent transfer to Ballyvolane PS.
	2055	Continue to operate WwPS.	Option A6: Upsize Untreated Wastewater Transfer.	Option A4: Upgrade WwTP by 15,000PE.
	2080	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwTP.
Overall recommended approach		Recommended Approach Overall ranked 1st with lowest cost. Environmentally ranked 1st due to removal of discharge at Kileens benefiting the river and providing wastewater network for Monard benefiting the population and avoiding negative effects of building a new WwTP.	Ranked 2nd and similar to Approach 1, but greater pipeline construction impacts due to the longer transfer pipelines required.	Ranked 3rd as overall highest costs and construction impacts from a pipeline transfer and the new Monard WwTP.

Table 7.11 Feasible Approaches for Sub catchment 3

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Carrignavar WwTP	2030	Option A6: Decommission WwTP. Construct transfer to Whitechurch WwTP (3.8km). WwPS to be sized for 1,250 PE to meet future demand. 910 PE transferred to Whitechurch WwTP.	Option A4: Upgrade WwTP by an additional 1,000 PE. Discharge to new location, downstream on River Glashaboy.	Option A4: Upgrade WwTP by an additional 1,000 PE. Discharge to new location, downstream on River Glashaboy.
	2055	Continue to operate WwPS.	Continue to operate WwTP.	Continue to operate WwTP.
	2080	Continue to operate WwPS.	Option A4: Capital replacement of 1,300 PE of WwTP.	Option A4: Capital replacement of WwTP.
Grenagh WwTP	2030	Option A1: Optimise WwTP to bring to compliance with ESDLs	Option A1: Optimise WwTP to	Option A1: Optimise WwTP to

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
			bring to compliance with ESDLs	bring to compliance with ESDLs.
	2055	Option A6: Decommission WwTP and construct transfer to Whitechurch WwTP (9km). WwPS to be sized for 1,450 PE to meet future demand. 1,250 PE transferred to Whitechurch WwTP.	Option A6: Decommission WwTP and construct transfer to Whitechurch WwTP (9km). WwPS to be sized for 1,450 PE to meet future demand. 1,250 PE transferred to Whitechurch WwTP.	Option A4: Capital replacement of 1,200 PE of WwTP with further upgrade of 250 PE. Discharge to new location, downstream on River Martin).
	2080	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwTP.
Whitechurch WwTP	2030	Continue to operate WwTP.	Continue to operate WwTP.	Continue to operate WwTP.
	2055	Option A6: Decommission / convert WwTP. Construct terminal WwPS (4,200 PE capacity). Utilise existing pipeline to Cork City network.	Continue to operate WwTP.	Continue to operate WwTP.
	2080	Continue to operate WwPS.	Option A6: Decommission / convert WwTP. Construct terminal WwPS (3,000 PE capacity).	Option A6: Decommission / convert WwTP. Construct terminal WwPS (3,000 PE capacity).
Overall recommended approach		Recommended Approach Ranked 1st overall as most cost effective. Environmentally best due to decommission of Carrignavar WwTP benefiting longest length of river and earlier decommission of Whitechurch.	Ranked 2nd as shorter length of river benefiting from Carrignavar WwTP discharge moved downstream and later Whitechurch decommission.	Ranked 3rd as shortest length of river benefiting from Carrignavar WwTP and Grenagh WwTp discharges moved downstream and later Whitechurch decommission.

*Capacity expansion at Carrigrennan WwTP has been factored into the evaluation and assessment of Carrigrennan WwTP.

Table 7.12 Feasible Approaches for Sub catchment 4

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Knockraha WwTP	2030	Option A6: Decommission WwTP.	Option A4: Upgrade Existing	Option A4: Upgrade Existing

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
		Construct Untreated Wastewater Transfer to Glanmire Bridge PS (7km via roads) and associated PS.	WwTP by 500PE. Option A6: Construct Final Effluent Transfer to Glanmire Bridge PS (7km via roads).	WwTP by 500PE. Option A6: Construct Final Effluent Transfer to Butlerstown River via Watergrasshill Transfer (4km via roads).
	2055	Continue to Operate WwPS.	Continue to Operate WwTP.	Continue to Operate WwTP.
	2080	Continue to Operate WwPS.	Option A4: Capital Replacement (350PE) and Upgrade Existing WwTP by 100PE.	Option A4: Capital Replacement (350PE) and Upgrade Existing WwTP by 100PE.
Watergrasshill WwTP	2030	Option A1: Optimise WwTP to meet ESDLs.	Option A1: Optimise WwTP to meet ESDLs.	Option A6: Construct Final Effluent Transfer to Butlerstown River (12km via roads).
	2055	Option A6: Decommission WwTP. Construct Untreated Wastewater Transfer to Glanmire Bridge PS (10km via roads) and associated PS.	Option A5: Construct New Brownfield WwTP (3,900PE). Option A6: Construct Final Effluent Transfer to Glanmire Bridge PS (10km via roads).	Option A5: Construct New WwTP (3,900PE).
	2080	Continue to Operate WwPS.	Continue to Operate WwTP + FE Transfer.	Continue to Operate WwTP.
Overall recommended approach		Recommended Approach Ranked 1st overall and environmentally with lowest cost and does not require construction of a new Greenfield plant, providing most benefit to the rivers.	Ranked 3rd overall with highest cost. Similar to approach 2 with later construction of the Greenfield site at Watergrasshill.	Ranked 2nd as requires construction of a new Greenfield WwTP and does not remove Knockraha discharge.

Table 7.13 Feasible Approaches for Sub catchment 5

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Carrigrennan WwTP	2030	Option A4: Upgrade existing	Option A4: Upgrade existing	Option A4: Upgrade existing

Site	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
		WwTP to provide tertiary treatment to meet Cork City growth demand and wastewater transfers from Blarney, Carrignavar, Whitechurch, Knockraha and Monard.	WwTP to provide tertiary treatment to meet Cork City growth demand and wastewater transfers from Blarney, Carrignavar, Whitechurch, Knockraha and Monard.	WwTP to provide tertiary treatment to meet Cork City growth demand and wastewater transfers from Blarney, Carrignavar, Whitechurch, Knockraha and Monard.
	2055	Option A4: 89,000PE upgrade of existing tertiary WwTP. Construct new 537,000PE quaternary treatment plant Upsize existing final effluent discharge outfall.	Option A4: 91,000PE upgrade of existing tertiary WwTP. Construct new 532,500PE quaternary treatment plant Upsize existing final effluent discharge outfall.	Option A6: Divert south Cork City to Cork Lower Harbour via the Southern Orbital Sewer. Option A4:26,750PE upgrade of existing tertiary WwTP. Construct new 435,000PE quaternary treatment plant Upsize existing final effluent discharge outfall.
	2080	Option A4: Increase treatment capacity by 41,000PE.	Option A4: Increase treatment capacity by 40,000PE.	Continue to operate WwTP.
Overall recommended approach		Recommended Approach Overall best approach. Environmentally ranked joint 2nd as the upgrades required for both options are at a very similar level.	Similar approach to Approach 1, however the capacity upgrades required at the treatment plant are greater than Approach 3.	Environmentally ranked 1st due to partial diversion of untreated effluent resulting in less discharge into the waterbody and lesser level of upgrades.

Table 7.14 Feasible Approaches for Sub catchment 6

Strategy horizon	Catchment	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Ballygarvan WwTP	2030	Option A6: Decommission WwTP. Construct untreated WW transfer and associated WWPS to Cork Lower Harbour WwTP via Carrigaline PS (5.4km).	Option A4: Upgrade WwTP by additional 500 PE.	Option A6: Decommission WwTP. Construct untreated WW transfer to Cork Lower Harbour WwTP via Carrigaline PS (5.4km).
	2055	Continue to operate WwPS.	Continue to operate WwTP.	Continue to operate WwPS.
	2080	Continue to operate WwPS.	Option A4: Capital Replacement (634 PE) and Upgrade Existing WwTP by 750 PE.	Continue to operate WwPS.
Halfway WwTP	2030	Option A1: Optimise WwTP to meet ESDLs.	Option A1: Optimise WwTP to meet ESDLs.	Option A1: Optimise WwTP to meet ESDLs.
	2055	Continue to operate WwTP.	Continue to operate WwTP.	Continue to operate WwTP.
	2080	Option A6: Decommission WwTP. Construct untreated WW transfer and associated PS to Cork Lower Harbour WwTP via Ballygarvan PS (8.4km).	Option A6: Decommission WwTP and transfer to Ballygarvan WwTP (8.4km).	Option A4: Capital replacement and upgrade of additional 500 PE.
Minane Bridge WwTP	2030	Option A6: Decommission WwTP Construct untreated WW transfer to Cork Lower Harbour WwTP via Carrigaline PS (5km) and associated WwPS.	Option A4: Upgrade WwTP by additional 300 PE.	Option A6: Decommission WwTP. Construct untreated WW transfer to Cork Lower Harbour WwTP via Carrigaline PS (5km).
	2055	Continue to operate WwPS.	Continue to operate WwTP.	Continue to operate WwPS.
	2080	Continue to operate WwPS.	Option A4: Capital replacement of 300 PE.	Continue to operate WwPS.

Strategy horizon	Catchment	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Overall recommended approach		Recommended Approach Overall best option as cheapest cost. Environmentally best as all WwTPs to be decommissioned providing greater benefit to rivers.	Overall most expensive. Environmentally ranked 3rd as only one WwTPs to be decommissioned providing least benefit to rivers.	Environmentally ranked 2nd as two WwTPs to be decommissioned providing less benefit to rivers than Approach 1.

*The upgrades required to Cork Lower Harbour WwTP for this feasible approach have been factored into the evaluation and assessment of Cork Lower Harbour WwTP.

Table 7.15 Feasible Approaches for Sub catchment 7

Approach	Horizon	Feasible Approach 1	Feasible Approach 2
Ballincollig WwTP	2030	Option A5: Construct New Greenfield 64,000PE Tertiary WwTP north of Lee River. Includes construction of untreated wastewater transfer across river. Decommission Existing WwTP when New Plant Constructed.	Option A4: 10,000PE upgrade of existing WwTP.
	2055	Option A4: Upgrade new WwTP by 8,000PE. Construct new 72,000PE quaternary WwTP.	Option A4: 19,000PE upgrade of existing WwTP. 33,000PE WwTP capital replacement. Construct FE transfer to Cork Lower Harbour WwTP (for quaternary treatment) (~24km via roads)
	2080	Continue to operate WwTP.	Continue to operate WwTP.
Killumney WwTP	2030	Option A6: Construct untreated WW transfer to Ballincollig WwTP (ongoing).	Option A6: Construct untreated WW transfer to Ballincollig WwTP (ongoing).
	2055	Continue to operate WwPS.	Continue to operate WwPS.
	2080	Continue to operate WwPS.	Continue to operate WwPS.
Overall recommended approach		Recommended Approach Overall best due to limited space for expansion and need for tertiary treatment in order to achieve ESDLs. Environmentally ranked 2nd due to introduction of a new discharge and impacts	Environmentally ranked 1st due to the removal of the Ballincollig discharge, benefiting approximately 7.30km of Good Status Objective River.

Approach	Horizon	Feasible Approach 1	Feasible Approach 2
		associated with building a new plant.	

Table 7.16 Feasible Approaches for Sub catchment 8

Approach	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Cork Lower Harbour WwTP	2030	Option A4: 5,000PE upgrade of existing WwTP *. Install tertiary treatment requirements.	Option A4: 5,000PE upgrade of existing WwTP *. Install tertiary treatment requirements.	Option A4: 5,000PE upgrade of existing WwTP *. Install tertiary treatment requirements.
	2055	Option A4: 14,000PE upgrade of existing WwTP*.	Option A4: 14,000PE upgrade of existing WwTP*. Construct new marine outfall to discharge Cork Lower Harbour WwTP and Ballincollig FE.	Option A4: 75,000PE upgrade of existing WwTP‡. Construct new 235,000PE quaternary WwTP (including Ballincollig WwTP FE treatment). Construct new marine outfall.
	2080	Option A4: 11,000PE upgrade of existing WwTP†. 65,000PE WwTP capital replacement.	Option A4: 11,000PE upgrade of existing WwTP†. 65,000PE WwTP capital replacement.	Option A4: 18,000PE upgrade of existing WwTP††. 65,000PE WwTP capital replacement.
Overall recommended approach		Recommended Approach Overall best as cheapest approach. Environmentally best ensuring future compliance and accommodation for demand. Does not require construction of a new outfall avoiding negative impacts on the water environment.	Similar to Approach 1 but requires construction of a new outfall.	Similar to Approach 2 but requires additional large upgrade to accommodate for quaternary treatment of Ballincollig loads increasing discharge to the waterbody.

*To address existing Cork Lower Harbour WwTP load and Sub Catchment 6 (Ballygarvan and Minane Bridge) loads.

†To address existing Cork Lower Harbour WwTP load and Sub Catchment 6 (Ballygarvan, Halfway and Minane Bridge) loads.

‡To address existing Cork Lower Harbour WwTP load, Sub Catchment 6 (Ballygarvan, and Minane Bridge) and South Cork City untreated WW diversion (61,000PE).

††To address existing Cork Lower Harbour WwTP load, Sub Catchment 6 (Ballygarvan, Halfway and Minane Bridge) and South Cork City untreated WW diversion (68,000PE).

Table 7.17 Feasible Approaches for Sub catchment 9

Approach	Horizon	Feasible Approach 1
Carrigtwohill WwTP	2030	Option A1: Optimise Carrigtwohill WwTP.
	2055	Option A4: Upgrade WwTP by 15,000 PE and extend the existing 710mm outfall by approximately 3.5km.
	2080	Option A4: Capital replacement of 30,000 PE of WwTP and construct an additional 2,000 PE upgrade.
Midleton WwTP	2030	Option A4: Upgrade WwTP by 7,500 PE. Continue to operate WwPS to transfer 5,100 PE to Carrigtwohill WwTP.
	2055	Option A6: Continue to operate WwPS to transfer 11,600 PE to Carrigtwohill WwTP.
	2080	Option A4: Capital replacement of 22,500 PE of WwTP and continue to operate WwPS to transfer 16,500 PE to Carrigtwohill WwTP.
Overall recommended approach		Recommended Approach Only proposed approach for Su catchment 9. This approach, particularly extension of the outfall pipeline ensures removal of current discharge from designated site and therefore protection of sensitive habitats.

Table 7.18 Feasible Approaches for Sub catchment 10

Approach	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
Ballymore	2030	Option A6: Construct untreated wastewater transfer to Cobh network (4km) and associated Pumping Station	Option A6: Construct untreated wastewater transfer to Cobh network (4km) and associated Pumping Station	Option A5: Construct new 500 PE WwTP and new FE discharge to Cork Harbour (0.5km land and 0.5km outfall).
	2055	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwTP.
	2080	Continue to operate WwPS.	Continue to operate WwPS.	Option A4: 500PE WwTP capital replacement with additional 50PE upsizing.
Cloyne WwTP	2030	Option A4: 3,600PE upgrade of existing WwTP. Option A6: Construct new FE	Option A6: Construct untreated WW transfer to Whitegate-Aghada WwTP (6.2km).	Option A4: 3,600PE upgrade of existing WwTP. Option A6: Construct new FE

Approach	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
		transfer and outfall to Rostellan.		transfer and outfall to Rostellan.
	2055	Continue to operate WwTP.	Continue to operate WwPS.	Continue to operate WwTP.
	2080	Option A4: 500 PE upgrade of existing WwTP 5,000PE WwTP capital replacement.	Continue to operate WwPS.	Option A4: 500 PE upgrade of existing WwTP 5,000PE WwTP capital replacement.
Saleen WwTP	2030	Option A6: Decommission existing WwTP. Construct untreated WW transfer to Cloyne WwTP (4.5km) and associated PS.	Option A6: Construct untreated WW transfer and connect to Cloyne to Whitegate-Aghada WwTP transfer line (1.1km)	Option A6: Decommission existing WwTP. Construct untreated wastewater transfer to Cloyne WwTP (4.5km)
	2055	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwPS.
	2080	Continue to operate WwPS.	Continue to operate WwPS.	Continue to operate WwPS.
North Cobh WWTP	2030	Continue to operate WwTP	Continue to operate WwTP	Continue to operate WwTP
	2055	Option A6: Decommission existing WwTP, construct new WwPS to connect to Cobh wastewater network (for treatment at Cork Lower Harbour WwTP)	Option A6: Decommission existing WwTP, construct new WwPS to connect to Cobh wastewater network (for treatment at Cork Lower Harbour WwTP)	Option A6: Decommission existing WwTP, construct new WwPS to connect to Cobh wastewater network (for treatment at Cork Lower Harbour WwTP)
	2080	Continue to operate WwPS	Continue to operate WwPS	Continue to operate WwPS
Whitegate - Aghada WwTP	2030	Option A4: 1,500 PE upgrade of existing WwTP.	Option A4: 5,000 PE upgrade of existing WwTP.	Option A4: 1,500 PE upgrade of existing WwTP.
	2055	Continue to operate WwTP.	Upgrade WwTP by an additional 2,500 PE.	Continue to operate WwTP.
	2080	Option A4: 500 PE upgrade of existing WwTP 4,000PE WwTP capital replacement.	Option A4: 7,500PE WwTP capital replacement.	Option A4: 500 PE upgrade of existing WwTP 4,000PE WwTP capital replacement.
Overall recommended approach		Recommended Approach Overall best as most cost effective.	Environmentally ranked 1st as removes three discharges from rivers.	Highest cost due to construction of a new plant and. Environmentally ranked

Approach	Horizon	Feasible Approach 1	Feasible Approach 2	Feasible Approach 3
		Environmentally ranked second as removes two discharges from rivers and continues operation at Cloyne WwTP.		3rd impacts associated with building a new plant and associated landtake.

Table 7.19 Feasible Approaches for Sub catchment 11

Approach	Horizon	Feasible Approach 1	Feasible Approach 2
Ballincurrig WwTP	2030	Continue to operate WwPS to transfer flows to Lisgoold South (ongoing project)	Continue to operate WwPS to transfer flows to Lisgoold South (ongoing project)
	2055	Continue to operate WwPS.	Continue to operate WwPS.
	2080	Continue to operate WwPS.	Continue to operate WwPS.
Leamlara WwTP	2030	Option A6: Construct untreated wastewater transfer to Lisgoold South WwTP (3.7km) and associated PS.	Option A5: Construct new WwTP (950 PE) at Leamlara. Option A6: Construct a final effluent transfer to Owenacurra River (3.7km).
	2055	Continue to operate WwPS.	Continue to operate WwTP.
	2080	Continue to operate WwPS.	Continue to operate WwTP.
Lisgoold South WwTP	2030	Option A4: Upgrade existing WwTP by additional 1,700 PE.	Continue to operate WwTP.
	2055	Continue to operate WwTP.	Continue to operate WwTP.
	2080	Option A4: Capital replacement of 2,200 PE and upgrade of an additional 200 PE.	Option A4: Capital replacement of 1,500 PE.
Lisgoold North WwTP	2030	Decommission WwTP and transfer flows to Lisgoold South via gravity sewer (Ongoing project)	Decommission WwTP and transfer flows to Lisgoold South via gravity sewer (Ongoing project)
Overall recommended approach		Recommended Approach Overall best as most cost effective. Environmentally ranked 1st as does not require construction of a new plant avoiding potential impacts on the environment.	Highest cost due to construction of a new plant and. Environmentally ranked 2nd impacts associated with building a new plant and land take from greenfield site.

7.4 Recommended Approach selection

7.4.1 Operational Effects

A summary of the environmental assessment of the Recommended Approaches in terms of long term operational effects across the time horizons for each of the WwTPs is presented in Table 7.20. Individual assessments for each WwTP against the SEA objectives are provided in Appendix B.

Table 7.20 Summary of Environmental Assessment (Operation Phase) all Horizons

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
Sub Catchment 1	Blarney WwTP	WwTP non-compliant against WWDL currently and in the future scenario. With impact on water quality WFD and drinking water downstream abstraction, not supporting WFD objective and aquatic biodiversity.	---	2030 optimisation will support meeting WFD objectives but does not address SWO spills. 2055 decommission and transfer will have a major positive effect on the waterbody supporting achieving High Status objective and positive effect on aquatic biodiversity and potential recreational benefits and protection of drinking water abstraction downstream. The compliant continued discharge to the river before decommissioning will have neutral effects on the Water Environment and Biodiversity.	+ 0	+++	+++
	Courtbrack WwTP	Although currently WWDL compliant, significant increase in PE will mean future non-compliance which will not support WFD objective of High Status.	---	2030 upgrade of the plant improving treatment and addressing increase in PE will contribute to keeping the watercourse at High Status as per its objective. However, currently there is no SWO on site and installation of one is not proposed for	++	++	++

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
				this option. Although compliant the lack of SWO may continue spills into to the river and could have some minor negative effects on the Water Environment and Biodiversity.	-	-	-
	Dripsey WwTP	Because of an undersized plant expected in 2080, although currently WWDL compliant increased load and more restrictive ESDLs expected, the receiving waterbody will fail to meet the objectives set by the WFD. One SWO not compliant in 2080 scenario. Increased pollutant loads can significantly impact aquatic biodiversity.	---	Optimisation of the plant in the interim period 2030 will bring plant into compliance. Option A4 proposes a full replacement of the current infrastructure, along with an upgrade to meet increased capacity demands. This along with an additional storm storage tank at the WwTP will resolve SWO compliance and will have a positive effect on aquatic biodiversity by reducing number and volume of future spills. Bringing the WwTP and SWO into compliance and ensuring future compliance may contribute to keeping the waterbody at High Status. The compliant continued discharge to the river will have neutral effects on the Water Environment and Biodiversity.	+	++	++
					0	0	0
	Inniscarra WwTP	Currently WWDL compliant however future capacity will be exceeded. WwTP SWO is currently compliant but is at risk of non-compliance in the 2080 scenario.	--	As the plant discharges into a soakaway and the plant serves a very small agglomeration the benefits to the waterbody from the 2030 decommission would be small. Similarly, removal of the discharge may have some minor positive effect on the lake Inniscarra abstraction,	+	+	+

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
				supporting the protection of the drinking water supply.			
Sub Catchment 2	Kileens WwTP	WwTP failing WWDL compliance currently and in the future scenario. Because of the conditions of an undersized plant expected in 2080 and of increased pollutant load, the receiving waterbody would be likely to fail to meet WFD objectives,	---	2030 WwTP decommission and effluent transfer will have a major positive effect on the waterbody supporting achieving Good WFD Status objective and positive effect on aquatic biodiversity and potentially terrestrial biodiversity due to close proximity of pNHA sites which are part of the Blarney River and habitats influenced by the water quality. There are potential recreational benefits.	+++	+++	+++
	Monard	The existing catchment does not have a significant wastewater network and resultingly does not have an existing wastewater treatment process that is operated by UE.	--	2030 construction of a pipeline will have a positive effect on Population and Human Health providing wastewater services to the catchment and reduce risks to the Water Environment.	++	++	++
Sub Catchment 3	Carrignavar WwTP	WwTP failing WWDL compliance currently and in the future scenario. No storm management system and no emergency overflows. Current and future scenario major negative effects on the WFD waterbody status, aquatic ecology and human health.	---	2030 WwTP decommission and effluent transfer will have a major positive effect on the waterbody supporting achieving Good WFD Status objective and positive effect on aquatic biodiversity.	+++	+++	+++

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
	Grenagh WwTP	Although currently compliant, future increase in PE loads will not help achieve WFD Status.	---	2030 optimisation will support meeting Good Status WFD objective. 2055 decommission and transfer will have a major positive effect on the waterbody supporting achieving Good Status objective and positive effect on aquatic biodiversity and potentially terrestrial biodiversity due to close proximity of pNHA sites which are part of the River Martin and habitats influenced by water quality. Potential recreational benefits. The compliant continued discharge to the river before decommissioning will have neutral effects on the Water Environment and Biodiversity.	+ 0	+++	+++
	Whitechurch WwTP	The site discharges to the Cork City Network so there is no river discharge point.					
Sub Catchment 4	Knockraha WwTP	Discharge increase over time will not support WFD High Status Objective. No storm water overflows. However, as this is a relatively small plant that discharges into a soakaway it does not have a direct outfall into river.	--	2030 decommission of the Knockraha WwTP will have a positive effect on the Water Environment and Biodiversity due to decommission of the plant and removal of discharge into the river could support waterbody achieving High Status objective. Decommissioning may also contribute to protection of the downstream freshwater abstraction and potentially terrestrial biodiversity due to proximity of pNHA sites which are part of the Glashaboy River and habitats influenced by the water quality.	++	++	++

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
	Watergrasshill WwTP	Because of the conditions of an undersized plant expected in 2080 and of an increased pollutant load, the option will not support meeting WFD objectives. Increased pollutant loads can significantly impact aquatic biodiversity. Blackwater River SAC is located 2.5 km downstream from the discharge outfall. Quality of the WWDL non-compliant discharge will have a negative effect on the protected site.	---	2030 optimisation of the plant will bring plant into compliance having some positive effect on the waterbody. 2055 Decommissioning of the Watergrasshill WwTP will have a positive effect on the Water Environment and Biodiversity due to removal of discharge from the river. This may contribute to achieving waterbody Good Status WFD objective and have a positive effect on aquatic biodiversity due to removal of non-compliant SWO. The compliant continued discharge to the river before decommissioning will have neutral effects on the Water Environment and Biodiversity.	+ 0	+++	+++
Sub Catchment 5	Carrigrennan WwTP	Currently achieves WWDL compliance with exception of Total Nitrogen, however, increase in PE loads will not help achieve WFD Status. However, as the discharge is located within a large transitional waterbody (Lough Mahon) with high dilution rates its negative effect on the waterbody is not large in scale.	---	2030 upgrade to provide tertiary treatment and 2055 upgrade to provide quaternary treatment will support achieving WWDL compliance and WFD status objective and positive effects for population, economy and health objectives. The compliant continued discharge to Lough Mahon will have neutral effects on the Water Environment and Biodiversity.	++ 0	++ 0	++ 0

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
Sub Catchment 6	Ballygarvan WwTP	Future increase in PE loads will prevent achieving WFD good status. Plant WWDL not compliant in current and future scenarios. No storm tanks on site will have a worsening effect on aquatic ecology.	---	2030 WwTP decommissioning and effluent transfer will have a major positive effect on the waterbody supporting achieving Good WFD Status objective; positive effect on aquatic biodiversity and population reducing odour issues.	+++	+++	+++
	Halfway WwTP	Although plant is achieving the discharge requirements specified within its WWDL, with the exception of Total P where a number of non-compliances have occurred, future increase in PE loads and no available space for future expansion, option will not support meeting WFD objectives. A lack of emergency overflows on site will have worsening effect on aquatic ecology.	---	2030 plant optimisation and network upgrades will bring the plant to compliance and reduction in spills will have a positive effect on aquatic ecology. 2080 decommission of the plant and effluent transfer will have a major positive effect on the waterbody supporting achieving Good WFD Status objective; positive effect on aquatic biodiversity and population reducing odour issues. The compliant continued discharge to the river before decommissioning will have neutral effects on the Water Environment and Biodiversity.	++ 0	++ 0	+++
	Minane Bridge (River Valley) WwTP	Although WWDL compliant, future increase in PE loads will prevent achieving Good Status WFD objective. The storm water overflow discharges directly into the Minane river will have a worsening effect on aquatic ecology.	---	2030 removal of discharge will have a positive effect on water environment and biodiversity due to discharge being located upstream of designated and national sites and will support achieving Good WFD Status objective; have a positive effect on aquatic biodiversity and population reducing odour issues.	+++	+++	+++

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
Sub Catchment 7	Ballincollig WwTP	The plant is currently not compliant with WWDL requirements, increase in PE loads will prevent achieving Good Status WFD Objective and continue to have negative effect on the aquatic biodiversity within the pNHA site downstream of the discharge.	---	The construction a new greenfield WwTP, with decommissioning of the current site, will bring the Ballincollig WwTP into compliance by 2030 and should also ensure the three SWOs remain compliant in the future which will provide positive effects on the Water Environment and Biodiversity. The upgrade of the new WwTP for quaternary treatment will have further positive effects on the water environment, biodiversity and human health. The compliant continued discharge to the river will have neutral effects on the Water Environment and Biodiversity.	++	+++	+++
					0	0	0
	Killumney WwTP	There is an ongoing project involving the decommissioning of Killumney WwTP for treatment at Ballincollig WwTP as part of Small Towns and Villages Growth Programme to enhance wastewater infrastructure in smaller urban areas.	---	2080 decommissioning of the plant and effluent transfer will have a major positive effect on the waterbody supporting achieving Good WFD Status objective and positive effect on aquatic biodiversity. The compliant continued discharge to the river before decommissioning will have neutral effects on the Water Environment and Biodiversity.	+++	+++	+++
					0	0	
Sub Catchment 8	Cork Lower Harbour WwTP	Although WWDL compliant, future increase in PE loads will prevent achieving Good Status WFD objective. However, as the discharge is located within a large coastal waterbody (Cork Harbour) with high dilution rates its	--	The 2030 upgrades to the Cork Lower Harbour WwTP capacity (Option A2) will maintain compliance with the WWDLs. The compliant continued discharge to Cork Harbour will have neutral effects on the Water Environment and Biodiversity.	+	+	+
					0	0	0

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
		negative effect on the waterbody is not large in scale.					
Sub Catchment 9	Carrigtwohill WwTP	The current system does not meet the P Emission Limit Values (ELV) limit and future increase in PE loads will prevent achieving Good Status WFD objective. The discharge is located within designated sites and upstream of sensitive habitats and negative effect on water environment and biodiversity will continue into the future.	---	Optimisation of the plant (Option A1) will bring plant into compliance with the projected ESDL's at the discharge location which may contribute to the waterbody achieving WFD Status Objective. Extending the existing outfall by approximately 3.5km (2055) will help protect sensitive habitats within the designated site. The compliant continued discharge will remain within designated sites and will have neutral effects on the Water Environment and Biodiversity.	++ 0	++ 0	++ 0
	Midleton WwTP	Site non-compliant against WWDL currently and in the future scenario will continue to have negative effect on water environment. Spills from non-compliant SWOs will continue to have negative effects on aquatic biodiversity.	---	The 2030 (Option A2) and 2080 (Option A4) upgrades to the WwTP will have a positive effect on water environment and biodiversity ensuring WWDL compliance supporting Good Status Objective. Positive effect on biodiversity through installation of complaint SWOs and reduction of spills. The compliant continued discharge to North Channel Great Island will have neutral effects on the Water Environment and Biodiversity.	++ 0	++ 0	++ 0
	Ballymore	The existing catchment does not have a significant wastewater network and	---	Option A6 will provide a better treatment efficiency and by not building a new WwTP	+++	+++	+++

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
Sub Catchment 10		resulting does not have existing wastewater treatment infrastructure operated by UE with negative effects on local communities and human health.		plant and a new discharge will be a better outcome for the local waterbody, reducing impact on customers and the public in the local area, reducing biodiversity risks to the environment.			
	Cloyne WwTP	Site non-compliant against WWDL currently and in the future scenario. With impact on water quality WFD and drinking water downstream abstraction, not supporting WFD objective and aquatic biodiversity. Discharge located upstream of Shellfish waters, European and national designates sites will continue to have negative effects in the future.	---	The 2030 (Option A3) and 2080 (Option A4) upgrades to the WwTP will have a positive effect on water environment and biodiversity ensuring WWDL compliance supporting Good Status Objective and population reducing odour issues. The compliant continued discharge to the river will have neutral effects on the Water Environment and Biodiversity.	+	+	++
					0	0	0
	Saleen WwTP	Although WWDL complaint the existing wastewater treatment process is currently performing very poorly and will increases in PE loads will prevent achieving Good Status WFD objective. Lack of storm storage and discharge into a SPA and pNHA will continue to have a negative effect on sesnsitive habitats.	---	Removal of discharge (2030) will have a positive effect on water environment and aquatic biodiversity supporting achieving Good WFD Status objective and protecting mudflat and salt marsh habitats within the designated sites.	+++	+++	+++
	North Cobh	Both organic and hydraulic capacities shall be exceeded, and the existing assets will surpass their service life after 2055, although existing wastewater treatment process is WWDL complaint.	---	WwTP decommission (2055) and removal of discharge will have a positive effect on water environment and aquatic biodiversity.	0	++	++

Sub Catchment	Agglomeration	Without draft CWS Solution	2030 to 2080	With draft CWS Recommended Approach	2030	2055	2080
	Whitegate – Aghada WwTP	Future increase in PE loads and ack of emergency overflows upstream (or within) the WwTP will have a negative effect on water environment preventing achieving WFD Good Status Objective and biodiversity due to spills. However, as the discharge is located within a large coastal waterbody (Outer Cork Harbour) with high dilution rates its negative effect on the waterbody is not large in scale.	--	The 2030 (Option A2) and 2080 (Option A4) upgrades to the WwTP will have a positive effect on water environment and biodiversity ensuring WWDL compliance supporting Good Status Objective. Positive effect on biodiversity through installation of complaint SWOs and reduction of spills. The compliant continued discharge to Outer Cork Harbour will have neutral effects on the Water Environment and Biodiversity.	+	+	++
					0	0	0
	Leamlara	The existing catchment does not have a significant wastewater network and resulting does not have existing wastewater treatment infrastructure operated by UE having negative effects on local communities.	---	Option A6 will provide a better treatment efficiency and by not building a new WwTP plant and a new discharge will be a better outcome for the local waterbody, reducing impact on customers and the public in the local area, reducing biodiversity risks to the environment.	+++	+++	+++
	Lisgoold South WwTP	Although WWDL compliant, future increase in PE loads will prevent achieving Good Status WFD objective. Site performance at Lisgoold South as at the time of the site visit the WwTP was not operational as it was undergoing upgrades and raw wastewater was discharged directly in the Owenacurra river.	---	The 2030 (Option A2) and 2080 (Option A4) upgrades to Lisgoold South WwTP will have a positive effect on water environment and biodiversity ensuring discharge is treated and WWDL compliant supporting Good Status Objective. Ensuring discharge compliance will also support protection of the drinking water supply. The compliant continued discharge to the river will have neutral effects on the Water Environment and Biodiversity.	+	+	++
					0	0	0

7.4.2 Construction effects

Construction effects from the Recommended Approaches are expected to be short term duration and including within site upgrade works, within site and new site location development for pumping stations with minor to moderate temporary effects in relation to SEA objectives. Network improvements and transfer pipelines are expected to be constructed mainly within the road network and detailed routing will need to be undertaken. There is potential for local community and traffic disruption associated with these works. Good practice environmental planning and management including traffic management is expected to be applied to address these effects.

The proposed new WwTP proposed for Ballincollig will need to be subject to detailed site selection process but is likely to involve greenfield site development, with associated land take and potential for habitat loss and cultural heritage/archaeological risks. These impacts will need to be considered further and compared to the alternative transfer options as part of detailed feasibility and environmental assessments.

The proposal to construct an extension to the Carrigtwohill effluent discharge has potential for habitat impacts within the SAC will need to be considered further as part of project level assessments, detailed routing. This strategic level assessment identifies the potential for short term effects from construction but potential for long term benefits for the most sensitive Atlantic Salt Meadow habitat. These are considered in more detail in the NIS.

8 Cumulative Effects Assessment

Article 3(5) of the SEA Directive states that it should be determined "*whether plans or programmes … are likely to have significant environmental effects".* Annex II (2) details the criteria for determining the likely significance of effects referred to in Article 3(5), including the need to take into consideration "*the cumulative nature of the effects*".

The EPA (2020) describes cumulative effects in SEA as "effects on the environment that result from incremental changes caused by strategic actions together with other past, present, and reasonably foreseeable future actions. These effects can result from individually minor but collectively significant actions taking place over time or space."

A cumulative effects assessment for a draft wastewater strategy should include:

- Effects of measures/options proposed within a plan or programme – **intra plan effects**; and
- Effects between the measures/options proposed within the plan or programme and other projects, plans and programmes – **inter plan effects.**

For cumulative effects to occur, there needs to be an overlap of temporal periods in some way for the impacts and/or the effect. For example, two strategic-level schemes being constructed at the same time could result in cumulative traffic disruption, while two schemes being operated over the same period and discharging to the same waterbody could result in cumulative impacts on water quality. Additionally cumulative effects can occur due to the combined loss or fragmentation of a particular habitat type. A precautionary approach has been taken for the cumulative effects assessment, which assumes that all options could be constructed and operated at the same time within each of the 2030, 2055 and 2080 time horizons.

The assessment has considered the cumulative effects across all SEA topics to identify those interactions that are likely to generate significant effects. These are likely to be related to:

- Biodiversity – for example, a cumulative loss or fragmentation of habitats or changes to a habitat quality through changes in water quality or land take for construction. Some of the species associated with these habitats could be vulnerable water quality or habitat changes;
- Water environment (surface water and groundwater WFD status) – for example, changes to water quality due to multiple discharges to the same receiving waterbody or added benefits from removal of discharges or improved treatment processes and discharge quality;
- People and health – for example, community nuisance or wellbeing impacts caused by multiple construction works taking place at the same time;
- Landscape and visual – for example, if there are a number of options located close together that could alter the landscape character or views;
- Cultural heritage – for example, if the same cultural heritage features affected by above ground infrastructure in close proximity or the combined effect of loss to undesignated buried archaeological assets; and
- Climate change – combined carbon emissions for the approach as a whole have been considered through the approach selection process and are considered here also to identify potential requirements for mitigation. Combined effects on climate change adaptation are also considered.

8.1 Intra plan cumulative assessment

The intra-plan cumulative assessment considers potential interaction or combined effects across Sub catchments for the 2030, 2055 and 2080 horizons. The actual timing of implementation works will depend on detailed programming but the assessment assumes a worst case where works might be undertaken at the same time if occurring within the same time horizon period. This potential for interaction during construction operation or both development phases is presented in Table 8.1. Within sub catchment in combination and

cumulative effects are assessed as part of the assessment of individual WwTP and sub catchment Recommended Approaches presented in Appendix B. This stage focuses on between sub catchment effects where interactions between sub catchments where construction, operation or both phases associated with Recommended Approach implementation may have cumulative negative or positive effects on the environment. This includes interactions where:

- Sub catchment Recommended Approaches are in proximity to common receptors such as community areas that could be affected by construction works including for transfers and network improvements and also in terms of potential beneficial effects;
- Sub catchment Recommended Approaches that will result in discharges or changes to common waterbodies resulting in either beneficial or adverse effects.
- The table identifies where there are potential interactions
- from construction for example pipeline works in the same period and affecting the same receptor as yellow – between works within sub catchment 2 and 1.
- From operational phase only for sub catchments 7 and 1, for sub catchments 9 and 5 and between sub catchments 8 and 10.

Table 8.1 Intra-plan Sub Catchment interaction

Sub catchment	Sub catchment 1	Sub catchment 2	Sub catchment 3	Sub catchment 4	Sub catchment 5	Sub catchment 6	Sub catchment 7	Sub catchment 8	Sub catchment 9	Sub catchment
Sub-catchment 2										
Sub-catchment 3										
Sub-catchment 4										
Sub-catchment 5										
Sub-catchment 6										
Sub-catchment 7										
Sub-catchment 8										
Sub-catchment 9										
Sub-catchment 10										

Sub catchment	Sub catchment 1	Sub catchment 2	Sub catchment 3	Sub catchment 4	Sub catchment 5	Sub catchment 6	Sub catchment 7	Sub catchment 8	Sub catchment 9	Sub catchment
Sub-catchment 11										

Key				
	Construction phase		Operation phase	
	Construction and Operation			

Any potential sub catchment interactions identified in Table 8.1 are related to the SEA objectives and presented in Table 8.2.

Table 8.2 Sub catchment potential cumulative effects

Key				
	No interaction or negligible cumulative effects	-	Potential for adverse cumulative effects	
+	Potential for beneficial cumulative effects	+/-	Potential for mixed beneficial and adverse effects	

Sub-catchment	SEA Objective								
	Water Environment	PopN, Econ, Rec, Health	Climate Change	Biodiversity	Material Assets	Landscape	Cultural Heritage	Geology and Soils	Air Quality
Sub-catchment 1 and 2		-							
Sub-catchment 1 and 7	+			+					
Sub-catchment 5 and 9	+			+					
Sub-catchment 10 and 8	+/-			+/-					

Sub-catchment	SEA Objective								
	Water Environment	PopN, Econ, Rec, Health	Climate Change	Biodiversity	Material Assets	Landscape	Cultural Heritage	Geology and Soils	Air Quality
All catchments combined	+		+/-	+					

Construction

In general, as the WwTPs serve different agglomerations they are not in close proximity, so construction works for the WwTPs are unlikely to have combined effects if they are undertaken over the same period. However, there is potential for transfer pipeline construction and network improvements to have some combined effects where they could occur at the same time within the same community area and cause some temporary disruption such as traffic disruption this was identified for Sub Catchment 1 and 2 with transfers within and on the edge of Kileens. There could also be cumulative impacts for Sub Catchment 5 and 9 if works on the Carrigrennan outfall resizing and the extension of the outfall from Carrigtwohill occur concurrently.

There are also combined climate change mitigation effects due to construction and embodied greenhouse gas emissions from materials required for plant upgrades, new plant and pipeline as well as construction activity.

Mitigation measures recommended in section 10 in relation to construction environmental management would address potential combined construction effects.

Operation

Operational cumulative effects include additional combined positive effects. Where WwTPs are optimised to bring them into WWDL compliance or plants are decommissioned and effluent is transferred away from the watercourses.

Sub Catchments 1 and 7 both involve decommissioning or improving treatment and effluent discharges to connected river waterbodies with potential combined positive effect on the water environment and biodiversity.

Sub Catchments 5 and 9 - the extended discharge from Carrigtwohill brings the discharge closer to the Carrigrennan discharge however the capacity of the waterbody for both discharges has been taken into account in the water quality modelling in relation to supporting the objective of achieving WFD good ecological status.

Sub catchments 8 and 10 from the combination of discharges from Cork Lower Harbour and Whitegate with improved quality of discharges to the marine waterbody supporting WFD good ecological quality

Overall, the combined effect of all the sub catchment options Recommended Approaches will support significant improvements to water quality and the aquatic ecology of the fresh water river and estuary networks draining to Cork Harbour. This will be achieved through a combination of decommissioning and transfer of WwTPs including many in the higher catchment areas on WFD high quality objective river waterbodies, as well as wastewater treatment and discharge improvement and compliance with more

stringent requirements, network improvements and SWO compliance reducing flooding and pollution incidents.

Overall benefits to the marine environment from both the river water quality improvements and the direct discharges being treated to meet higher standards including through the quaternary treatment at Carrigrennan and supporting meeting WFD good status objectives were limited by urban drainage and wastewater discharge. These improvements combine to support objectives for, biodiversity, fisheries and aquaculture, recreation and tourism, health and wellbeing.

The combined effect of operational greenhouse gas emissions could increase overall reflecting growth and responding capacity and treatment process improvements but this will be substantially mitigated through increased energy efficiency and use of renewable energy sources and the approach to be developed for implementation is set out in draft CWS section 11.2 The draft CWS is assessed as having a likely positive effect on resilience of the environment to climate change by supporting water quality improvements taking account of climate change effects. The improvements to the network and to SWOs will reduce the incidents of out of sewer flooding and untreated discharges also reducing stress for aquatic ecology for both fresh water and marine waterbodies.

8.2 Inter Plan Cumulative Assessment

In addition to within draft CWS combined effects potential combined and cumulative effects with the implementation of Table 8.3 presents Cumulative Assessment between draft CWS and other plans and programmes.

Table 8.3 Inter-Plan Cumulative Assessment

Key		No interaction or negligible cumulative effects	-	Potential for adverse cumulative effects
	+	Potential for beneficial cumulative effects	+/-	Potential for mixed beneficial and adverse effects

Policy, Plans and Programmes	Water Environment	PopN, Econ, Tourism	Health and Wellbeing	Climate Change Mitigation and	Biodiversity,	Material Assets	Landscape,	Cultural Heritage	Geology and Soils	Air Quality
National Water Resources Plan (2021) and South West Regional Plan (2023) - Uisce Éireann	+	+	+	+/-	+/-		+/-		+/-	
Water Services Strategic Plan (2050 Uisce Éireann	+	+	+	+/-	+/-					

Policy, Plans and Programmes	Water Environment	PopN, Econ, Tourism	Health and Wellbeing	Climate Change Mitigation and	Biodiversity,	Material Assets	Landscape,	Cultural Heritage	Geology and Soils	Air Quality
National Wastewater Sludge Management plan (2016) (being updated as the National Bioresources Strategy) Uisce Éireann	+/-			+/-		+/-			+	+/-
Lead in Drinking Water Mitigation Plan 2016 Uisce Éireann	No interaction for environment									
Uisce Éireann Biodiversity Action Plan (Uisce Éireann, 2021).	+				+/-					
Climate Action Plan 2025				+/-						
Water Action Plan 2024 (A River Basin Management Plan for Ireland)	+	+	+	+	+	+/-				
Project Ireland 2040 National Marine Planning Framework (2021)	+/-	+	+	+/-	+	+/-				
Creating Green Infrastructure for Ireland: Enhancing Natural Capital for Human Wellbeing	+	+	+		+				+	
Ireland's 4th National Biodiversity Action Plan 2023-2030	+			+	+					
National Development Plan Review 2025	+/-	+	+	+/-	+/-	+/-	+/-	+/-	+/-	+

Policy, Plans and Programmes	Water Environment	PopN, Econ, Tourism	Health and Wellbeing	Climate Change Mitigation and	Biodiversity,	Material Assets	Landscape,	Cultural Heritage	Geology and Soils	Air Quality
Healthy Cities Programme (WHO) (Healthy Ireland Cities & Counties)		+	+							
Our Rural Future: Rural Development Policy 2021-2025		+								
A Waste Management Plan for a Circular Economy - Ireland's National Waste Policy 2024-2030	+/-	+		+	+/-				+/-	+/-
Whole of Government Circular Economy Strategy 2022				+					+/-	
Climate Action Plan 2025				+/-						
National Energy and Climate Plan 2021-2030				+/-						
Heritage Ireland 2030		+	+					+/-		
Regional Spatial and Economic Strategy (RSES) for the Southern Region of Ireland	+/-	+		+/-	+/-		+/-	+/-	+/-	+
Regional Tourism Strategy (currently being developed by Fáilte Ireland)	+	+								

Policy, Plans and Programmes	Water Environment	PopN, Econ, Tourism	Health and Wellbeing	Climate Change Mitigation and	Biodiversity,	Material Assets	Landscape,	Cultural Heritage	Geology and Soils	Air Quality
Cork City, Harbour and East Cork Destination and Experience Development Plan (published 2024)		+								
Catchment Flood Risk Assessment and Management Programme (CFRAM)	+/-			+						
Flood Risk Management Plan (Lee, Cork Harbour and Youghal Bay River Basin) 2018		+/-	+/-							
Groundwater protection Schemes	No potential interaction identified									
Cork County Development Plan 2022-2028	+/-	+		+/-	+/-		+/-	+/-	+/-	+
Cork City Development Plan 2022-2028	+/-	+		+/-	+/-		+/-	+/-	+/-	+
Cork County Council Climate Adaptation Strategy 2019-2024				+/-						
Cork City Council Climate Change Adaptation Strategy 2019-2024				+/-						
Cork County Local Economic and Community Plan (LECP) 2024-2030		+	+							

Policy, Plans and Programmes	Water Environment	PopN, Econ, Tourism	Health and Wellbeing	Climate Change Mitigation and	Biodiversity,	Material Assets	Landscape,	Cultural Heritage	Geology and Soils	Air Quality
Cork City's Local Economic and Community Plan (LECP) 2024-2029		+	+							
Visit Cork Sustainability Policy 2023-2030		+								
Cork City Heritage and Biodiversity Plan 2021-2026	+		+		+/-			+/-		
Cork City, Harbour and East Cork Destination and Experience Development Plan (2024)	+		+		+/-			+/-		

8.2.1 Summary of inter plan effects and additional mitigation

There is potential for both negative and positive combined and cumulative effects related to plans supporting growth and infrastructure development. There could be negative impacts from construction and land take on for example biodiversity, landscape, cultural heritage and geology and soils but also positive impacts related to measures to protect the environment and provide sustainable development which the draft CWS Recommended Approaches support.

The potential negative construction effects identified can be addressed through the standard construction environmental management measures proposed (see section 10).

Potential mixed positive and negative impacts were identified with Uisce Éireann's NWRP Regional Water Resource Plan for the South West. This plan includes proposed options within the CMA for:

- Increase abstraction at Inniscarra and upgrade WTP.
- Interconnect with Bandon Regional and Clonakilty.
- Maintain allowable abstraction from Owenacurra River and supply deficit from Inniscarra for Midleton WRZ.
- Rationalise Knockburden, Templemartin & Garranes, Aghabullogue, Coolineagh, Corbally, Clash Leamleara, Ballincurrig Lisgoold, Walshtown, Grenagh, Stoneview Blarney, Cullen, Ballyshoneen, Vicarstown, Ballinagree, Rylane, Bayview, Tibbotstown and Clashanamid WRZs Cork City WRZ in deficit. Increase existing GW abstraction to meet WRZ future deficit.

- Surface Water and Ground Water abstractions maintained/ increased or new (Existing sources: Inniscarra Lake (LWB), Lee (Cork) River (RWB), Bandon RWB, Butlerstown RWB, Glashaboy (Lough Mahon) and Ballinhassig East GW. Increased or new ground water abstractions increased or new in WRZs Whitechurch, Cloyne, Whitegate & Minane Bridge).

There are potential beneficial effects from removing or improving upstream WwTPs in terms of raw water quality for water treatment. Where WwTPs remain upstream of abstraction these will need to be considered in the relevant Drinking Water Safey Plans including for abstraction downstream of the proposed new plant at Ballincollig where risks will need to be assessed under the rUWWTD to determine the need for Quaternary treatment at the WwTP. Potential negative effects identified relate to possible combined construction impacts where works are concurrent and in the same area, however with standard planning and construction management approaches these effects are likely to be minor and short term.

9 Environmental Assessment of Draft CWS Recommended Approach

9.1 Summary of the Draft CWS SEA Assessment

The overall draft CWS Recommended Approach is presented in Figure 9-1 with WFD waterbody status, high objective rivers and environmental constraints identified.

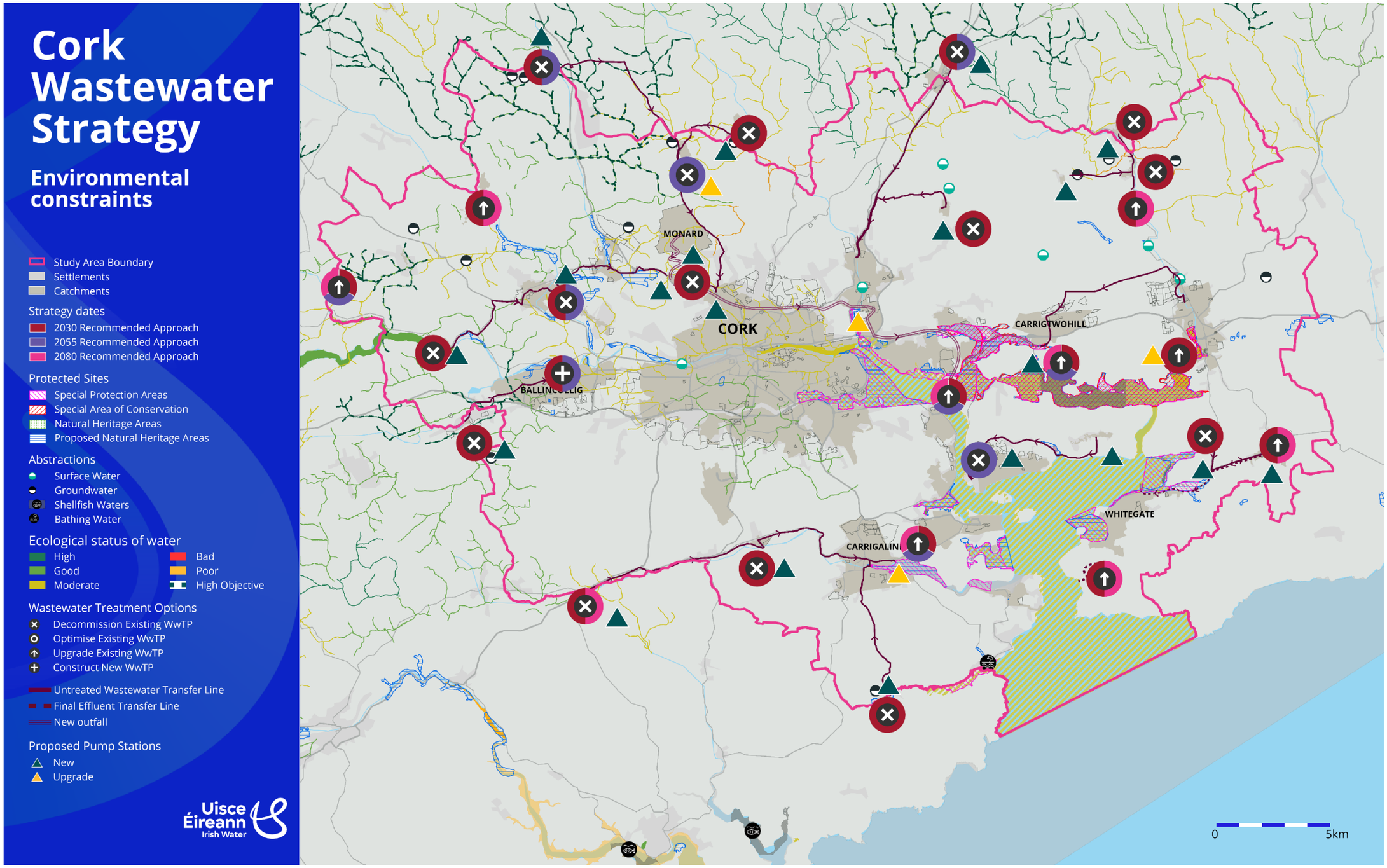

Figure 9-1 Draft CWS overall Recommended Approach with WwTP site proposals with environmental constraints

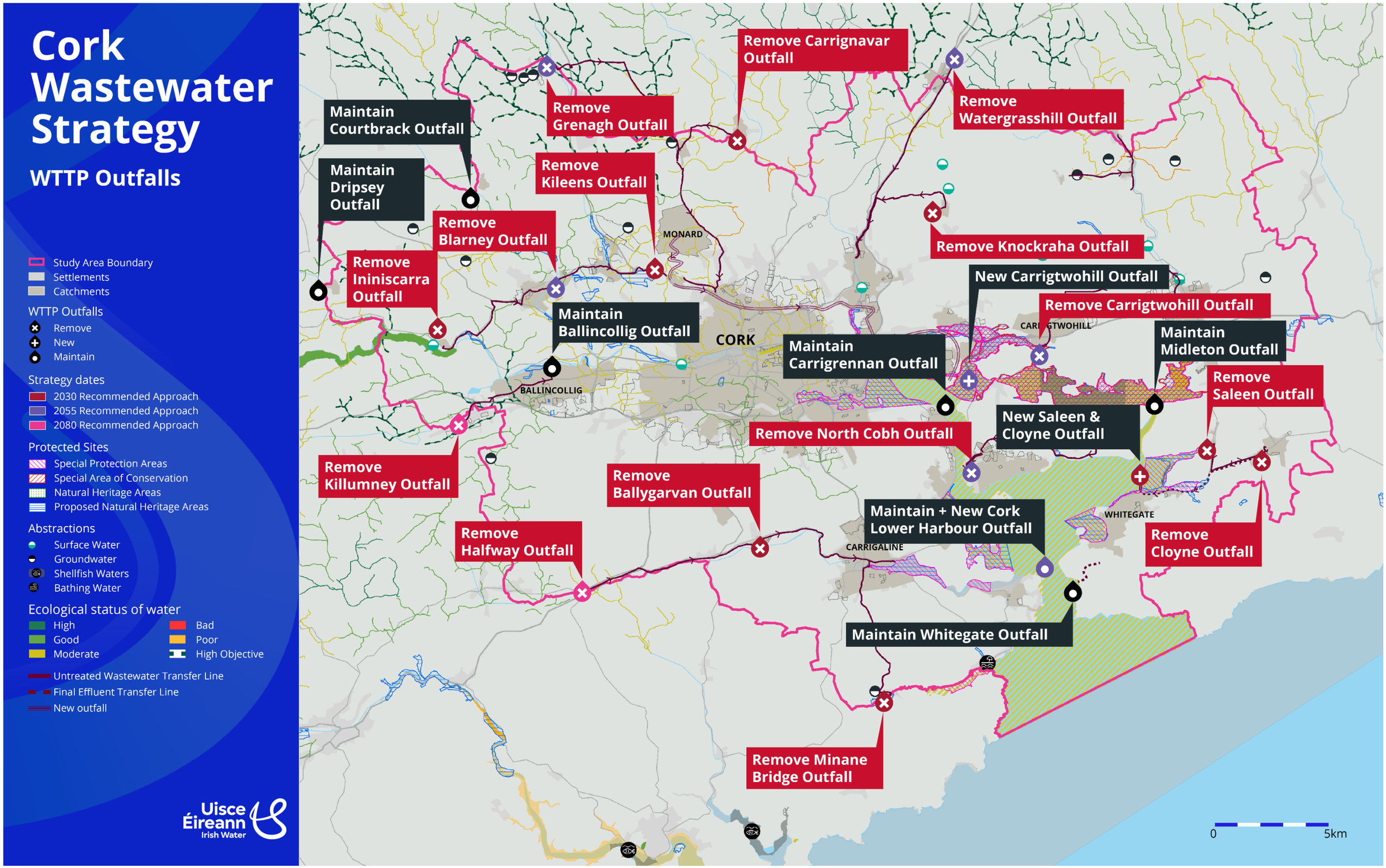

Figure 9-2 Draft CWS overall Recommended Approach with the proposals for WwTP Outfalls with environmental constraints

A summary environmental assessment of the draft CWS proposals as a whole against the SEA objectives is set out in Table 9.1. This includes the 'do nothing' or 'without plan' scenario and the 'with draft CWS' proposals across the time horizons considering the overall performance of the draft CWS against the SEA Objectives.

Table 9.1 Environmental Assessment of current and future scenarios for the Draft CWS Recommended Approach

Key : Performance of the plan against the SEA objectives			
Likely to have overall positive effects	+	Likely to have a mixed positive and negative effects	+/-
Likely to have overall negative effects	-	Likely to have mixed neutral and negative effects	0/-
Effects are uncertain or not applicable	? or N/A	Likely to have mixed neutral and positive effects	0/+
Likely to have a neutral effect	0	Likely to have mixed neutral, positive and negative effects	0/+/-

Design Horizon	Phase	SEA Objective								
		Water Environment	PopN, Econ, Rec, Health	Climate Change	Biodiversity	Material Assets	Landscape	Cultural Heritage	Geology and Soils	Air Quality
Do nothing 2030 to 2080	Operation	--	-	-	-	-	0/-	0	0/-	-
Draft CWS 2030	Construction	0/-	0/-	-	0/-	+/-	0/-	0/-	0/-	0/-
	Operation	+	+	0/ +/-	0/ +	0/ +/-	0/ +	0	0/ +/-	0/ +
Draft CWS 2055	Construction	0/-	0/-	-	0/-	+/-	0/-	0/-	0/-	0/-
	Operation	+	+	0/ +	0/ +	0/ +	0/ +	0	0/ +	+

Design Horizon	Phase	SEA Objective								
		Water Environment	PopN, Econ, Rec, Health	Climate Change	Biodiversity	Material Assets	Landscape	Cultural Heritage	Geology and Soils	Air Quality
Draft CWS 2080	Construction	0/-	0/-	0/-	0/-	+/-	0/-	0/-	0/-	0/-
	Operation	+	+	0/+	+	0/+	0/+	0	0/+	+

9.2 Summary of the Draft CWS Natura Impact Statement (NIS)

The NIS (draft CWS Appendix 2) concluded that, based on a plan-level assessment of the draft CWS, and with implementation of appropriate mitigation for protecting European sites, there will be no adverse effects on the integrity of any European site(s), either alone or in-combination with other plans or projects as a result of progressing Recommended Approaches within the draft CWS.

As any projects that are progressed following the draft CWS will require individual environmental assessments, including, where appropriate, Environmental Impact Assessment and Appropriate Assessment (See NIS Section 1.3) in support of planning applications (where a project requires planning permission) or in support of licensing applications (for example, for new discharges). Any such applications will also be subject to public consultation. All project proposals are screened for AA as part of Uisce Éireann's standard procedures.

Furthermore, the Recommended Approach for a sub-catchment may require re-appraisal as a result of other changes such as population fluctuation, technical advances or general development around Cork Harbour. Any such changes would require environmental assessments, including, where appropriate, revisiting the SEA and Screening for AA.

10 Implementation, Mitigation and Monitoring Plan

10.1 Draft CWS implementation proposals

The draft CWS in Section 12 sets out how the implementation of the CWS Recommended Approach will be phased to align with Uisce Éireann's capital investment planning framework and adhering to standard regulatory approval processes overseen by both the Commission for Regulation of Utilities (CRU) and the EPA. Given the scale and complexity of the required interventions, the Strategy's delivery is expected to span multiple investment cycles.

While the Recommended Approach presents a comprehensive proposal for advancing wastewater infrastructure across the CMA, each individual project within this framework will require its own specific project plan. These plans will be influenced by various factors and will necessitate unique inputs, including site selection processes, concept and detailed design, feasibility studies, business case development, planning applications, foreshore licences and Wastewater Discharge License (WWDL) applications. The necessity for each individual requirement will be determined at project level.

Each project will undergo assessment in accordance with national investment governance procedures to ensure value for money, environmental compliance, and alignment with long-term sustainability goals and this strategy. The CWS outlines a broad strategy horizon for implementing the Recommended Approach, recognising the full lifecycle of individual project delivery, encompassing appraisal, planning, procurement, construction, and operation phases.

Projects requiring new greenfield sites will necessitate site selection reports to identify preferred locations for new infrastructure, initiating land acquisition procedures and the planning process. New pipelines and outfalls will also be subject to detailed routing studies and relevant assessment and planning process as required. Additionally, projects involving changes to permitted discharge ELVs and WwTP capacity increases will require new WWDL applications to the EPA. The full requirements for each project will be determined at project level and will include AA screening. EIA screening and will be subject to environmental/social /sustainability assessments to identify risks and opportunities in relation to meeting external and internal commitments including Uisce Éireann's internal plans and policies such as the WSSP2050 objectives and monitoring targets, sustainability framework, Biodiversity Action Plan objectives and Bioresources plan.

10.2 Mitigation Approach

Mitigation measures will be necessary to remove, avoid or reduce the impacts identified in this SEA Environmental Report, including those identified in the individual Sub Catchment Recommended Approach assessments set out in Appendix B, and also as reported in the NIS Section 7 in relation to avoiding adverse effects on the site integrity of European Sites.

The CWS is one of the subsidiary Tier 2 plans that sits under Uisce Éireann's Water Services Strategic Plan (WSSP) 2050. The management of wastewater was addressed under Strategic Objective 3: Protect and Restore the Environment of the WSSP and also under Strategic Objective 4: Sustainable Services Fit for the Future. The WSSP2050 SEA identified high level actions to support the implementation of the WSSP 2050 and to manage and monitor delivery including from the Tier 2 plans. These requirements are taken into account in the mitigation and monitoring measures proposed for the draft CWS.

10.3 General Mitigation Measures and Principles

The various measures that may be applied to Recommended Approaches include:

- General measures (established construction best-practice, etc.) which will be applied to all options.
- Solution-specific measures (stablished and reliable measures identified to avoid specific potential effects in relation to the SEA Objectives)

- Further assessments and data collection, monitoring feedback and adaptation.

Note that these measures are not exhaustive or exclusive and must be reviewed at the Recommended Approaches level and project stages, taking into account any changes in best-practice as well as project-specific survey information or studies.

Furthermore, there is also a general requirement that all lower tier plans and/or interventions arising from the implementation of the draft CWS will be required to comply with the relevant Habitats Regulations, SEA Regulation and EIA regulations and other relevant planning and consenting processes where necessary.

10.3.1 General Mitigation Measures

All Recommended Approaches will be subject to project-level environmental assessment as and when they are brought forward, which will include assessments of their potential for significant environmental effects during their construction (or operation).

These assessments will consider or identify, but not be limited to:

- potential for avoiding effects through design (e.g. alternative pipeline routes, alternative technologies; micro siting);
- best practice construction measures that need to be incorporated into Recommended Approach design and/or planning to avoid or mitigate potential effects, for example, ensuring that sufficient working area is available for pollution prevention measures to be installed; and
- restrictions to construction timing (e.g. seasonal restrictions for over-wintering birds or timing to avoid conflict with other construction works affecting connected road network within same community.

10.3.2 Pollution Prevention

Best practice construction methods are likely to be applicable to all of the Recommended Approaches and can be relied on (at this level) to prevent significant or adverse effects on a European site occurring as a result of construction related impacts (e.g. pollutants). Pollution control measures will be detailed in project specific construction and environmental management plans. The following guidance documents detail the current industry best-practices in construction that are likely to be relevant to all options:

- Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters; and
- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes. Construction Industry Research and Information Association (CIRIA) guidance:
- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- CIRIA C692: Environmental Good Practice on Site;
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance; and
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide.
- The best-practice procedures and measures detailed in these documents will be followed for all construction works arising from the draft CWS as a minimum standard, unless project-specific investigations identify additional measures and/or more appropriate non-standard approaches for dealing with potential impacts.

10.3.3 Measures for environmental planning and construction management

Most species-specific avoidance or mitigation measures can only be determined at the Recommended Approach project level, following detailed project-specific surveys.

Detailed mitigation measures will vary according to a range of factors that cannot be determined at the CWS plan level. In addition, some general 'best-practice' measures may not be appropriate. However, the following general measures will be followed to minimise the potential for impacts unless project level environmental assessments or project level AA indicate that they are not required or not appropriate, or that alternative or additional measures are more appropriate/necessary:

- **Works Programme:** The works programme and requirements for each Recommended Approach will be determined at the earliest opportunity to allow surveys and mitigation to be appropriately scheduled
- **Early stakeholder and community engagement** - programme to provide sufficient time for consultations with bodies such as the National Parks and Wildlife Service (NPWS), Environment Protection Agency (EPA) and Inland Fisheries Ireland (IFI) and other relevant stakeholders including local communities, planning authorities and landowners as relevant.
- **Scheme Design:** Will aim to minimise the environmental effects by 'designing to avoid' potential impacts and also incorporate enhancements and optimise environmental benefits. This should include consideration of the potential suitability of NbS in relation to network or treatment processes and potential to include support or participation in catchment measures that will provide wider environmental and community benefits.
- **EIA and AA screening,** planning and consent requirements, environment/sustainability relevance will be undertaken early on to identify requirements and support planning surveys and influence detailed options and design.
- **Habitat Loss/fragmentation:** Pipelines are usually (where practical) constructed within existing public roads, therefore limiting or avoiding the potential for habitat loss or fragmentation within designated sites or valuable habitats. Where possible all new infrastructure such as WwTPs will be sited outside designated sites. Where these cannot be avoided altogether, detailed surveys of habitats within the affected area will be undertaken to locate and avoid sensitive habitats. Similarly, any upgrade of existing infrastructure within or adjacent to designated sites and habitats supported protected species will aim to avoid impacts on these species or habitats through appropriate scheme design.
- **Biodiversity net gain assessments** will be undertaken to identify habitat loss and need for enhancements ideally within the site or, if required, at off site locations.
- **Invasive Species:** There is the potential for both terrestrial and aquatic invasive alien species to be present in the CMA and risks will be assessed and specific mitigation measures identified to avoid spreading invasive species many of which occur in the aquatic environment.
- **Soil and waste management plans** should be part of construction/decommissioning planning to minimise losses and support circular economy principles.
- **Cultural Heritage and Archaeological assessment –** where works are in proximity to cultural heritage sites consultation and assessments should be undertaken and where ground works affect previously undisturbed group archaeological risk assessments should be undertaken.
- **Flood Risk Assessments -** these will be required where development could affect land within flood risk zones or where base flow or land drainage is changed.
- **Air pollution and noise assessments-** standard construction good management practices should be applied to minimise disruption to local communities from dust and noise and specialist assessments may be required such as for new where odour issues can be a concern. Specific conditions from local authorities and through planning conditions will need to be adhered to.

- **Traffic management plans –** construction works affecting traffic on roads will need to be appropriately planned and managed with consideration of other potential connecting in road works or specific timing to minimise disruption.
- **Pre-construction Surveys/Seasonal Restrictions/Ecological/Environmental Clerk of Works:** To ensure appropriate protection, pre-construction surveys will be undertaken for all future Recommended Approaches (where required). Additionally, the implementation of seasonal working restrictions may be required. Furthermore, works in sensitive ecological areas will need to be supervised by an experienced ecologist/Ecological Clerk of Works (ECoW) with appropriate qualifications to manage the risks associated with the specific conservation interests of any affected European Site.

10.4 Recommended Approaches - Specific Mitigation Measures

Whilst the general principles and approaches described above are applicable to all the Sub Catchment Recommended Approaches as they are progressed through project-level development, certain Recommended Approaches or aspects of them will require specific measures.

Plan level and sub catchment specific mitigation measures are identified below.

10.4.1 Plan level measures

- **Proactive community engagement** - supporting awareness campaigns on challenges for WwTPs and water pollution to encourage appropriate behaviours, and to support understand the improvement works proposed and long-term benefits compared to temporary disruption
- **Partnership and collaboration for catchment management**- water quality modelling identified the influence of other sources of pollution affecting water quality and aquatic biodiversity including in relation to BOD, ammonia and phosphates. These are identified where water quality modelling used 'notionally clean' concepts to identify treatment and discharge requirements. These are identified as potential areas to prioritise support for catchment management measures aimed at reducing other sources of pollution. These can provide wider environmental benefits in addition to water quality improvements such as environmental enhancement for biodiversity and flood management. The types of measures involved can improve water retention in soils, reducing nutrient run off and soil erosion. These measures can only be delivered through collaboration with other parties and landowner involvement.
- **Partnership and collaboration for network improvements -** with the local authorities in relation to new developments and urban regeneration can support the network improvements and integration of Nature based Solutions/Sustainable Urban Drainage systems with potential to provide wider environmental and community benefits.
- **Partnership and collaboration with on marine environment and fisheries –** with the Maritime Area Regulatory Authority and Sea-fisheries Protection Authority on monitoring and initiatives for protecting and enhancing resilience and quality of the transitional and coastal waters
- **Nature based Solutions (NbS**) - WwTP and network upgrades should be considered as part of detailed design the potential to include NbS as part of delivering requirements and also to including provide additional water quality and biodiversity benefits where this is identified as feasible.
- **Circular economy**/waste and sludge management**,** energy efficiency and renewable energy generation, contribution to carbon net gain targets and use of carbon calculator tools should be integrated into project development and design and operation improvements.

10.4.2 Sub catchment and site measures

The sub catchment and site-specific mitigation measures incorporate the mitigation requirements identified in the NIS along with SEA mitigation measures in Table 10.1 below.

Table 10.1 Site specific mitigation measures

Sub Catchment	Agglomeration	Proposals with Key Issues / Risks	Mitigation Measures
Sub Catchment 1	Blarney WwTP	Site construction works for optimisation and then decommissioning works and construction of pumping station, 26km of pipeline for transfer with potential for habitat loss and disruption/ disturbance.	Standard good construction/ decommissioning management including circular economy principles and traffic management for pipeline and network construction. Detailed transfer route alignment and assessment for example to minimise habitat loss. Surveys and assessments depending on routing such as ecology, contaminated land, cultural heritage/ archaeological interest. Application of biodiversity net gain to address any pipeline habitat losses – consider final use of decommissioned site.
	Courtbrack WwTP	Land take requirement likely to include some habitat loss and potentially within flood plain. Site construction for works upgrade	Environmental surveys and assessments including ecology, planning, cultural heritage/archaeology, and flood risk assessment. Application of Biodiversity net gain to address losses – consider potential to include enhancement on site. Consider scope for NbS as part of design. Opportunities for NbS measures include: Sludge Drying Reed Beds
	Dripsey WwTP	Land take requirement for upgrade -likely to include some habitat loss and potentially within flood plain. Site construction for works upgrade.	Environmental surveys and assessments including ecology, planning, cultural heritage/archaeology, and flood risk assessment. Application of Biodiversity net gain to address losses – consider potential to include enhancement on site. Consider scope for NbS use as part of design. Opportunities for NbS measures with acceptable discharge requirements where the projected PE does not exceed 2,500 PE include: Wetland, Reedbed/Sludge Drying Reed Beds/SWO Storm Management Lagoon
	Inniscarra WwTP	Decommissioning works.	Standard good construction management including circular economy principles.
	All	Receiving water bodies influenced by pollution from other sources and	Identify opportunities to support Upper Lee catchment management measures to reduce nutrient pollution to the Shournagh, Dripsey

Sub Catchment	Agglomeration	Proposals with Key Issues / Risks	Mitigation Measures
		hence use of notionally clean basis for water quality modelling.	rivers – including engagement with business and farmers- such as changes to cropping/cultivation, reducing runoff and including using NbS. Include renewable energy sources such as solar panels in upgrade designs. Consider potential for biodiversity enhancement and net gain as part of any site based NbS use.
Sub Catchment 2	Kileens WwTP	Decommissioning works, transfer pipeline construction	Standard good construction including circular economy principles. Detailed pipeline transfer route alignments and assessment to minimise habitat loss. Surveys and assessments depending on routing such as ecology, contaminated land, cultural heritage/archaeological interest. Application of biodiversity net gain to address any losses-consider use of decommissioned sites.
	Monard	Transfer pipeline and pumping station construction	As above
Sub Catchment 3	Carrignavar WwTP	Decommission WwTP construction works for a 3.8km untreated wastewater transfer pipeline to Whitechurch WwTP.	Standard good construction/decommissioning including circular economy principles and traffic management for pipeline construction. Detailed pipeline transfer route alignment and assessment to minimise habitat loss. Surveys and assessments depending on routing such as ecology, contaminated land, cultural heritage/archaeological interest.
	Grenagh WwTP	Initial optimisation then pipeline transfer - Worsened ambient receiving water (river) quality may impact Recommended Approach selection	Consider support for catchment management measures/initiatives to improve receiving river water quality. Standard measures as above.
	Whitechurch WwTP	Decommission and add new pumping station Additional load to Cork City Network and potential network capacity constraints	Recommended Approach has been included within network modelling assessment and outcomes. Standard measures as above.

Sub Catchment	Agglomeration	Proposals with Key Issues / Risks	Mitigation Measures
	All	Potential habitat losses from construction works.	Application of biodiversity net gain to address any losses – consider use of decommissioned sites.
Sub Catchment 4	Knockraha WwTP	Recommended Approach relies on integration with existing wastewater pumping stations, networks and Carrigrennan WwTP capacity upgrade.	Recommended Approach has been included within network modelling assessment and outcomes Standard measures as above.
	Watergrasshill WwTP	Worsened ambient receiving water (river) quality may impact Recommended Approach selection Recommended Approach relies on integration with existing wastewater pumping stations, networks and Carrigrennan WwTP capacity upgrade	Consider support for catchment management measures/initiatives to improve receiving river water quality Recommended Approach has been included within network modelling assessment and outcomes
	All	Combined potential habitat losses from above construction works	Application of biodiversity net gain to address any losses – consider use of decommissioned sites
Sub Catchment 5	Carrigrennan WwTP	Site construction for WwTP upgrade and the upsize of the treated effluent discharge outfall. Site boundary adjacent to SAC/SPA/pNHA. Tree planting within site area. Discharge outfall outside designated areas.	Site has capacity for expansion without need to extend into designated areas. Further project level environmental assessment will need to identify any additional measures to avoid impacts on adjacent designated sites and from upsizing discharge outfall. Potential for loss of trees planted within site and other habitats - where possible loss should be avoided/minimised. Within site habitat losses will need to be assessed using the Biodiversity net gain approach and may require off site enhancements. Consider scope for including NbS as some part of design. Consider potential for cumulative construction effects with works on Sub Catchment 9 for the outfall extension from Carrigtwohill if these are undertaken at the same time.

Sub Catchment	Agglomeration	Proposals with Key Issues / Risks	Mitigation Measures
Sub Catchment 6	Ballygarvan WwTP	Recommended Approach relies on integration with existing wastewater pumping stations, networks and Cork Lower Harbour WwTP capacity upgrade Potential proximity of pipeline to European Site.	Recommended Approach has been included within network modelling assessment and outcomes Project-level route alignment /design to maximise distance between pipeline and European site
	Halfway WwTP	Worsened ambient receiving water (river) quality may impact Recommended Approach selection	Consider support for catchment management measures/initiatives to improve receiving river water quality. Review of existing and best available treatment technologies to ensure future compliance. Standard construction management measures
	Minane Bridge (River Valley) WwTP	Recommended Approach relies on integration with existing wastewater pumping stations, networks and Cork Lower Harbour WwTP capacity upgrade	Recommended Approach has been included within network modelling assessment and outcomes Standard construction management measures
	All	Combined habitat losses from construction works above	Application of biodiversity net gain to address any losses - consider use of decommissioned sites.
Sub Catchment 7	Ballincollig WwTP	Upstream of public surface water abstraction.	Site specific risk assessment under the rUWWTD will be required to determine if quaternary treatment is required Detailed site selection assessments and optioneering to confirm Recommended Approach compared to alternative options. Site selection to aim to minimise valuable habitat/amenity/ loss, landscape/visual impacts for local community, odour and archaeological risk and WFD and aquatic ecology impacts from new outfall location. Flood risk assessment may be required to consider changes to baseflow.

Sub Catchment	Agglomeration	Proposals with Key Issues / Risks	Mitigation Measures
			Standard construction/decommissioning good practice measures and for pipeline routing and river crossing. Application of biodiversity net gain to address habitat losses. Consider final use of decommissioned site – community and biodiversity benefits.
	Killumney WwTP	Decommissioning and transfer pipeline construction – with potential for habitat loss and proximity to a European Site.	Standard construction/decommissioning measures and routing assessment as above Project-level design to maximise distance between pipeline and European site. Application of biodiversity net gain to address any losses
Sub Catchment 8	Cork Lower Harbour WwTP	Site upgrade for tertiary treatment	Standard construction measures as above. Application of biodiversity net gain to address any losses
Sub Catchment 9	Carrigtwohill WwTP	Carrigtwohill existing site partly within SAC/SPA/pNHA designation will require upgrade works. Current discharge located within SAC with risks to Atlantic Salt Marsh. New discharge pipeline may have construction impacts on habitats within the SAC.	Detailed site assessment of project area to determine ecological importance to SPA/SAC habitats and species Project-level design to microsite new infrastructure to locations outwith the SPA/SAC/pNHA site boundary Detailed site assessment of project area to determine ecological importance to SPA/SAC habitats and species including potential areas of Atlantic saltmarsh habitat and identify areas of invasive alien species. Update baseline mapping of sensitive habitats to inform pipeline routing and construction approach and to support future monitoring. Project-level design to microsite new infrastructure to locations outwith any newly identified areas of saltmarsh and ensure no surface structures which would cause physical obstruction to normal sediment/tidal flows. Undertake construction works outwith the overwintering period for qualifying interests. Biosecurity management plan to control risk of common cord-grass colonisation. Outfall assessments to consider also cultural heritage/archaeological interest and pollution risks

Sub Catchment	Agglomeration	Proposals with Key Issues / Risks	Mitigation Measures
	Midleton WwTP	Recommended Approach relies on integration with existing wastewater pumping stations, networks and Carrigtwohill WwTP capacity upgrade Additional transfer to Carrigtwohill with reduced discharge from existing site,	Standard route selection process and good construction management measures. Application of biodiversity net gain to address habitat losses.
Sub Catchment 10	Ballymore WwTP	Transfer pipeline construction - Approach relies on integration with existing wastewater pumping stations, networks and Cork Lower Harbour WwTP capacity upgrade	Standard route selection process and good construction management measures. Recommended Approach has been included within network modelling assessment and outcomes
	Cloyne WwTP	Land acquisition will be required for future upgrade Flood risk assessment (FRA) may be required for future site expansion	Early engagement with landowner(s) and Planning Authority and undertake relevant environmental surveys and assessments including FRA at early project stage to ascertain flood mitigation and other mitigation requirements. Consider potential for NbS as part of design considerations. Application of biodiversity net gain to address habitat losses.
	Saleen WwTP	Decommissioning of septic tanks and transfer	Standard route selection process and good construction management measures.
	North Cobh	Decommissioning WwTP. Land acquisition will be required for future PS.	Standard route selection process and good construction management measures. Early engagement with landowner(s) and Planning Authority and undertake relevant environmental surveys and assessments including FRA at early project stage to ascertain flood mitigation and other mitigation requirements. Application of biodiversity net gain to address habitat losses.
	Whitegate – Aghada WwTP	Upgrade to WwTP construction and pipeline	Project-level design to maximise distance between pipeline and European site.

Sub Catchment	Agglomeration	Proposals with Key Issues / Risks	Mitigation Measures
		with proximity to European Site,	Detailed site assessment of project area to determine ecological importance to SPA species. Undertake construction works outwith the overwintering period for qualifying interests.
Sub Catchment 11	Ballincurrig WwTP	No construction works	Standard operational measures.
	Leamlara	Transfer pipeline	Standard route selection process and good construction management measures.
	Lisgoold South WwTP	Site construction for works upgrades. Ambient water quality in receiving waterbody from other sources	Standard good construction, planning and design measures. Consider support for catchment management measures to improve water quality. Confirm treatment requirements in relation to downstream water abstraction and treatment. Application of biodiversity net gain to address any losses – consider potential to include enhancement on site. Opportunities for NbS measures with acceptable discharge requirements where the projected PE does not exceed 2,500 PE include: Wetland, Reedbed/ Sludge Drying Reed Beds/ SWO Storm Management Lagoon

10.5 Draft Monitoring Plan

A monitoring plan is required under the SEA regulations to provide a basis for identifying significant environmental effects during the implementation of the plan. This is required to review the predicted impacts of the CWS, and the adequacy of the mitigation measures recommended. This allows additional mitigation to be applied where required and can support an adaptive management approach.

The monitoring plan covers the integration of environmental and sustainability considerations throughout implementation of the CWS. The draft Monitoring Plan for the draft CWS is provided in Table 10.2

Monitoring Plans provide a means to demonstrate the effectiveness of the adopted plan/programme approach using environmental and sustainability objectives, targets and indicators. They also permit the early identification of emerging significant effects to enable corrective actions to be taken during Plan implementation. Monitoring can also identify how a plan is supporting positive outcomes and contributing to meeting its objectives.

EPA Guidance on SEA Statements and Monitoring (EPA, 2023b) covering monitoring plans identifies that monitoring can help evaluate whether SEA is fulfilling its core objective of providing for a high level of protection of the environment and the promotion of sustainable development (Article 1 of the SEA Directive) and notes the following benefits:

- Potential to demonstrate the effects of implementing a plan/programme - the plan's environmental performance.

- Identifying knowledge gaps and collecting new data over time and thereby reduce uncertainties in the assessment – so that data gaps can be addressed.
- Measuring indicators over time can identify long-term positive or negative changes and trends in the environment.
- Identifying unforeseen effects or impacts that may not have been identified during the assessment.
- Identify the need for additional mitigation measures or for appropriate remedial action to be undertaken where issues are identified, as well as to inform project level assessments.
- Providing the basis to inform the review and preparation of subsequent iterations of plans/programmes.
- Supporting streamlining of future SEA processes by changing the starting point in the baseline.

The EPA guidance recommendations for monitoring include that:

- Actions are appropriately targeted and focused and relevant to the potential significant effects.
- Makes use of any existing monitoring to avoid unnecessary duplication of effort.
- Environmental monitoring is integrated into the plan implementation monitoring and review process.
- Regular reporting on monitoring and implementation is provided.
- Future plan iterations take account of monitoring findings.

The SEA monitoring is integrated into the draft CWS's overall monitoring proposals to ensure that environmental considerations are evaluated alongside other key performance measures. This process will involve assessing the environmental impacts of the plan's implementation, with a focus on the sustainability of wastewater services including the protection of ecosystems, shellfish, and bathing waters from wastewater discharges. The findings from SEA monitoring will contribute to the five-yearly reviews of the CWS and will also feed up to inform future reviews and iteration of the WSSP, as well as the annual sustainability reporting obligations reported in the Annual Report. This will ensure that the CWS remains responsive to environmental legislation and our commitment to environmental protection and climate change mitigation and adaptation.

10.5.1 Review and update and remedial action

The CWS will undergo regular reviews, at least every five years. These reviews will allow adaptation to changing circumstances and evolving needs. Updates will be informed by changes in legislation and government policy related to wastewater services and environmental protection and restoration as well as improvements to information available, especially on asset performance, demographics, development proposals and climate change. The SEA monitoring plan reporting will feed into this process on environmental performance.

The five-yearly assessment will be supported by annual progress reviews and an interim report to check that progress is being made towards meeting the CWS and SEA Objectives. If the progress reporting and five-yearly assessment indicates that CWS proposals may not be achieved and/or a new approach is needed to meet secure, safe and reliable wastewater services in the CMA, actions in the strategy will be updated as needed as identified in the draft CWS.

SEA monitoring against SEA targets will also inform the identification of changes to the plan where remedial action is required including where potential for significant adverse effects on the environment is identified. The Monitoring Plan will also be reviewed and updated to ensure flexibility to meet changing requirements and data availability.

When a change to the draft CWS Recommended Approach is needed, this will be evaluated for environmental impact according to SEA and AA regulations. Consultations with the EPA and government departments are part of this process, as mandated by EU regulations. If the change is deemed to have a significant environmental impact, a Strategic Environmental Assessment (SEA) will be conducted. Additionally, an Appropriate Assessment (AA) will be performed if the change could significantly affect European sites, unless essential for site management and significant effects can be scientifically ruled out.

Table 10.2 Monitoring plan: indicators and targets

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
Cross topics	All objectives	Progress implementing draft CWS Recommended Approaches and supporting measures and meeting SEA monitoring plan targets	See below	See below	Uisce Éireann Summary of performance against SEA indicators /targets to be reviewed annually and report up to the WSSP 2050 5 year review at a high level and for the next iteration of the CWS.
Water Environment	Water quality and quantity Prevent deterioration of the WFD status of waterbodies with regard to quality and quantity due to discharges of wastewater from treatment plants. Contribute towards the "no deterioration" WFD condition target and restore and improve	River Basin Management Plan (RBMP) Significant Pressures - Categories Urban Wastewater and urban drainage in the CMA study area. Number of non compliant SWOs in the CMA Number of Site Spill risk assessments completed for existing wastewater assets.	Implementation of Measures identified for Uisce Éireann in the RBMP and sectoral action plans Implementation of the proposed network improvements to bring SWOs into compliance and avoid out of sewer flooding Implementation of Site Spill risk assessments for all sensitive sites.	Significant pressures lists in the EPA WFD Application on EDEN EPA WFD https://gis.epa.ie/GetData/Download WWDL complaince reviews prepared by the EPA Sectoral action plans within the relevant Catchment Management Plan (sub plans of the RBMP, yet to be developed)	Environmental Protection Agency (EPA) WFD Application - annual reports against KPIs (yet to be developed)

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
	waterbody status to meet WFD, MSFD and RBMP objectives related to the provision of wastewater services.			Uisce Éireann implementation information	
	Flood risk Protect and, where possible, reduce risk from flooding as a result of Uisce Éireann's provision of wastewater services.	Number of Network flood events in the CMA Project level information from flood risk assessments	No network out of sewer flood events associated with CMA network No increase to flood risk as a result of project developments - Project level information	Uisce Éireann data	Uisce Éireann annual data collection
Population, Economy, and Tourism and Recreation (including angling), health and wellbeing	Population, Economy, and Tourism and Recreation Protect and support sustainable economic and population growth, with i) preventing restrictions to recreation and amenity facilities	Performance assessment metrics reported to CRU No of Recommended Approaches in progress and delivered Number of community complaints related to wastewater services in the CMA	Performance assessment metric targets No complaints Community awareness improvement	Commission for Regulation of Utilities (CRU) performance assessment report Uisce Éireann information and surveys	CRU performance assessment report EPA annual Urban Wastewater report Uisce Éireann annual data collection – existing monitoring

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
	protecting and ii) enhancing freshwater and marine fisheries and shellfish protected areas. Health and wellbeing Protect and contribute to enhancement of human health and wellbeing related to Uisce Éireann's provision of wastewater services.	Wastewater communication/awareness programmes in the CMA Wastewater regulation compliance Wastewater Discharge Authorisation (WWDA) Bathing water quality Wastewater Discharge Authorisation (WWDA) Shellfish water requirements Shellfish waters quality	Compliance with wastewater regulations WWDA Bathing waters requirements compliance Bathing water quality requirements achieved Shellfish waters quality requirements achieved	EPA annual report Urban Wastewater Uisce Éireann WWDA Annual Environmental report Uisce Éireann wastewater annual returns Uisce Éireann Sectoral action plans within the relevant Catchment management plan.	

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
Climate Change	Climate change mitigation Minimise contributions to greenhouse gas emissions through energy efficiency and measures contributing to meeting carbon reduction targets, related to the provision of Uisce Éireann's wastewater services.	CSRD metrics and CRU performance assessment metrics related to greenhouse gas emissions for construction and operation, energy efficiency and use of renewable energy sources - for the CWS proposals	Net zero carbon ambition for 2040	Uisce Éireann data Uisce Éireann's Carbon calculation tool for project development	Uisce Éireann Annual data collection CRU- Performance assessment report
	Climate change adaptation Take account of additional pressures on the environment due to climate change and promote measures supportive of climate change resilience related to provision of wastewater services. Take account of additional risks to wastewater services	CSRD metrics (to be confirmed) CRU performance assessment metrics Network capacity improvements and stormwater storage increase	Proposed capacity and storm water storage improvements Implemented	Uisce Éireann data	Uisce Éireann Annual data collection CRU Performance assessment report

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
	and infrastructure due to climate change and improve resilience to the effects of climate change such as to extreme weather events.				
Biodiversity	Protect and enhance terrestrial, aquatic and soil biodiversity and habitat connectivity, with particular regard for European and nationally designated sites (including proposed and candidate sites and protected species). Achieve BAP commitments to No Net Loss of habitats related to provision of wastewater services.	Biodiversity net gain metrics Biodiversity conservation incorporated into decision making Length of river benefiting from removed or improved discharge Salt marsh habitat area near Carrigtwohill No of Recommended Approached taken forward including NbS or catchment initiatives	Biodiversity net gain targets Predicted length of rivers benefiting from CWS achieved Salt marsh area near Carrigtwohill increased NbS opportunities considered as part of project development where relevant	Uisce Éireann monitoring for BAP Uisce Éireann Annual Report Uisce Éireann project data – including BNG tracker	Uisce Éireann Annual Report and–CSRD metrics (to be confirmed) Uisce Éireann- Annual data collection

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
Material Assets	Resource use and waste management Minimise resource use and waste generation from new or upgraded wastewater infrastructure and the management of sludge and residuals from treatment processes. Seek to apply circular economy principles across lifecycle decision making for resources and wastes.	CSRD metrics (in development) Project level information Volume of sludge generated and disposed to land/ used for energy generation/ bioresource	CSRD targets	Uisce Éireann - Waste volumes and destination metrics tracked	Uisce Éireann- Annual data collection
	Asset use Minimise impacts on other material assets and infrastructure and optimise use of existing wastewater assets including through capacity and	Volume of construction waste reused or to landfill	CSRD targets	Uisce Éireann - Waste volumes and destination metrics tracked	Uisce Éireann- Annual data collection

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
	upgrades of existing wastewater sites.				
Landscape, Townscape and Seascape	Protect and enhance designated and valued landscapes/townscapes and seascapes and visual amenity in relation to the provision wastewater services.	Project level information	Project level targets	Uisce Éireann project data	Uisce Éireann five yearly review
Cultural Heritage – Archaeological and Architectural	Protect and enhance designated and undesignated cultural heritage assets and archaeological interest, including their condition, settings and access related to the provision of wastewater services.	Project level information	Project level targets	Uisce Éireann project data	Uisce Éireann five yearly review
Geology and Soils	Protect soils and geological heritage sites and contribute towards the appropriate management of soil	Project level information	Project level targets	Uisce Éireann	Uisce Éireann five yearly review

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
	quality and quantity related to wastewater services				
Air Quality	Identify and seek to apply wastewater treatment improvements, higher design standards and operation practices to minimise odour from wastewater plants.	No. of upgraded wastewater treatment and new plants meeting odour standards	Wastewater treatment measures and new plants meeting required odour standards	Uisce Éireann reporting requirements under SI No. 787 2005	Uisce Éireann annual submission as required by SI. No. 787 of 2005

11 Next steps

11.1 Draft Cork Wastewater Strategy, SEA and AA consultation

The next step will be the review of the consultation responses. These will be taken into account in finalising the CWS.

Following the completion of the consultation and finalisation and adoption of the CWS, an updated SEA Environmental Report (including the SEA appendices), along with the SEA Statement, NIS, AA Determination and final CWS will be published with the Consultation Report online at the following website: https://www.water.ie/cws.

The subsequent SEA stage is Stage 5 the implementation of the CWS including the environmental mitigation measures, the Monitoring Plan and the review and feedback process to inform internal reviews, an interim monitoring report and a 5 yearly Iteration of the CWS.

Appendix A Relevant Legislation, Plans and Programmes

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
International												
Environmental Liability Directive (2004/35/EC), consolidated 2019	✓	✓	✓	✓				✓	✓		H	N
Water Framework Directive (2000/60/EC)	✓	✓	✓	✓	✓	✓		✓			H	N
Bathing Water Directive (2006/7/EC)	✓	✓									H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Floods Directive (2007/60/EC)	✓	✓	✓		✓	✓	✓	✓			H	N
Nitrates Directive (91/676/EEC consolidated version 2008	✓	✓		✓				✓			H	N
Urban Wastewater Treatment Directive (91/271/EEC as amended 98/15/EEC) consolidated 2014	✓	✓		✓	✓	✓					H	N
Marine Strategy Framework Directive	✓		✓	✓		✓					H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
(2008/56/EC) consolidated 2017												
Groundwater Directive (2006/118/EC) consolidated 2014	✓	✓		✓				✓			H	N
Maritime Spatial Planning Directive 2014/89/EU	✓	✓				✓	✓				H	N
Common Fisheries policy (2023)	✓	✓		✓		✓	✓				H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Aarhus Convention	✓	✓	✓	✓				✓	✓		H	N
WHO Global Air Quality Guidelines (published 2021)		✓							✓		L	N
Drinking Water Directive (2020/2184)	✓	✓	✓		✓			✓			H	N
Strategic Environmental Directive (2001/42/EC)	✓	✓	✓	✓	✓	✓	✓	✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Environmental Impact Assessment Directive (2014/52/EU)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H	N
Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (as amended 2014/52/EU)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H	N
Public Participation Directive 2003/35/EC (public participation in the process of drawing up	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
certain plans and programs related to the environment).												
EU Nature restoration law (entered into force 2024)	✓		✓	✓	✓	✓	✓	✓		✓	H	N
The Council Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora (Habitats Directive)	✓	✓	✓	✓		✓	✓	✓			H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
The (2009/147/EC) of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Birds Directive), consolidated 2019				✓							L	N
Waste Framework Directive (2008/98/EC), consolidated 2024	✓	✓		✓	✓		✓				H	N
European Landscape Convention (ELC) (published 2000)	✓	✓				✓	✓	✓			L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Ambient Air Quality Directive (2008/50/EC), consolidated 2015		✓		✓					✓		L	N
Industrial Emissions Directive (2010/75/EU) former integrated pollution prevention and control Directive, consolidated 2024	✓	✓	✓	✓	✓			✓	✓	✓	L	N
Environmental Noise Directive (2002/49/EC), consolidated 2021		✓								✓	L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
The Kyoto Protocol 1997	✓		✓	✓				✓	✓		L	N
Paris Agreement 2015	✓	✓	✓	✓				✓	✓		H	N
EU Energy and Climate (2020) Package 2009	✓	✓	✓	✓		✓		✓	✓		L	N
Renewable Energy Directive EU/2018/2001) (as amended EU/2023/2413)	✓	✓	✓	✓	✓			✓		✓	L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Energy Efficiency Directive (EU/2023/1791)	✓	✓	✓	✓	✓			✓		✓	L	N
Council Regulation Directive EU/2022/2577 laying down a framework to accelerate the eployment of renewable energy, consolidated 2024	✓	✓	✓	✓	✓			✓		✓	L	N
EU Action Plan - Towards a Zero Pollution for Air, Water and Soil 2021	✓	✓	✓	✓				✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
EU Conventions on Archaeological, Architectural and Cultural Heritage							✓				L	N
Proposed EU Soil Monitoring Directive	✓		✓	✓	✓			✓		✓	H	N
EU Urban Waste Water Directive (91/271/EEC) (as amended), consolidated 2014	✓	✓		✓	✓				✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
EU Drinking Water Directive (2020/2184) (as amended)	✓	✓			✓						H	
Seveso III Directive (2012/18/EU) on the control of major-accident hazards involving dangerous substances	✓	✓	✓	✓	✓			✓	✓		H	
Sewage Sludge Directive (86/278/EEC), consolidated 2022	✓	✓		✓	✓			✓			H	

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
EU Sustainability Policy (Environment and green economy; Environment policy)	✓	✓	✓	✓		✓		✓	✓		L	N
UN Sustainable Development Goals 2015-2030	✓	✓	✓	✓	✓	✓	✓	✓	✓		H	N
The Sustainable Development Goals National Implementation Plan 2018-2020	✓	✓	✓	✓	✓	✓	✓	✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Ireland's Second National Implementation Plan for the Sustainable Development Goals 2022-2024	✓	✓	✓	✓	✓	✓	✓	✓	✓		H	N
European Green Deal 2020-2050	✓	✓	✓	✓		✓		✓	✓		H	N
World Health Organization Guidelines for Drinking Water Quality (4th edition, 2017)	✓	✓	✓	✓	✓	✓		✓			H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Water safety plan manual: step-by-step risk management for drinking-water suppliers (2nd edition, 2023)	✓	✓	✓		✓			✓			H	N
EU Tourism Policy		✓				✓	✓				L	N
EU Biodiversity Strategy for 2030	✓	✓	✓	✓				✓	✓		H	N
Communication from the Commission to the European Parliament, the	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Council, the European Economic and Social Committee and the Committee of the Regions on Green Infrastructure: Enhancing Europe's Natural Capital Strategy												
EU Soil Strategy for 2030	✓		✓	✓		✓		✓			H	N
Convention for the Protection of the							✓				L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Architectural Heritage of Europe (Granada, 1985)												
Convention for the Protection of the Archaeological Heritage of Europe (revised) (Valletta, 1992)							✓				L	N
National												
Wildlife Act 1976 (as amended including 2010)	✓		✓	✓				✓			L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
The Climate Action and Low Carbon Development Act 2015 amended by Climate Action and Low Carbon Development (Amendment) Act 2021	✓	✓	✓	✓	✓			✓			H	N
Transcribed Irish legislation - European Communities (Environmental Liability) Regulations 2008 S.I. No. 547/2008 (as amended 2015 S.I. No. 293/2015)	✓	✓	✓	✓				✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Transcribed Irish legislation - European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 S.I. No. 435/2004 (as amended 2011 S.I. No. 200/2011)	✓	✓	✓	✓	✓			✓	✓		H	N
Environmental Protection Agency Act 1992 updated 2024	✓	✓	✓	✓				✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Local Government (Water Pollution) Act, 1977, updated 2021	✓	✓		✓	✓	✓					H	N
Climate Action and Low Carbon Development (Amendment) Bill 2021		✓	✓	✓	✓			✓			H	N
Transcribed Irish legislation - European Communities (Industrial Emissions) Regulations 2013 S.I. No. 138/2013	✓	✓						✓	✓		L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Transcribed Irish legislation - European Communities (Water Policy) Regulations 2003 S.I. No. 722/2003 (as amended 2010 S.I. No. 326/2010)	✓	✓	✓	✓		✓		✓			H	N
Transcribed Irish legislation - Bathing Water Quality Regulations 2008 S.I. No. 79/2008 (as amended 2016 S.I. No. 163/2016)	✓	✓									H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Transcribed Irish legislation – European Union (Water Policy) (Abstractions Registration) Regulations 2018 (S.I. No. 261/2018)	✓							✓			H	N
Transcribed Irish legislation - European Communities (Assessment and Management of Flood Risks) Regulations 2010 S.I. No. 122/2010	✓	✓	✓			✓	✓	✓			H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Transcribed Irish legislation - European Communities (Marine Strategy Framework) Regulations 2011 S.I. No. 249/2011 (as amended 2018 S.I. No. 648/2018)	✓		✓	✓		✓					H	N
Transcribed Irish legislation - European Communities Environmental Objectives (Groundwater) Regulations 2010 S.I. No. 9/2010 (as	✓	✓		✓	✓			✓			H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
amended 2016 S.I. No. 366/2016)												
Transcribed Irish legislation - European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009)												N
Water Environment (Abstractions and Associated	✓		✓	✓	✓						L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Impoundments) Act, 2022 (The Abstractions Act)												
Transcribed Irish legislation - Planning and Development (Strategic Environmental Assessment) Regulations 2004 S.I. No. 436/2004 (as amended 2011 S.I. No. 201/2011)	✓	✓	✓	✓	✓	✓	✓	✓	✓		H	N
Transcribed Irish legislation - European Union (Planning and	✓	✓	✓	✓		✓	✓	✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Development) (Environmental Impact Assessment) Regulations 2018 S.I. No. 296/2018 (as amended S.I. No. 646/2018)												
Water Services Act, 2013 (as amended 2017), updated 2023	✓	✓									H	N
Transcribed Irish legislation - European Union (Renewable Energy) Regulations 2020 S.I. No. 365/2020	✓		✓		✓	✓					L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Planning and Development Act (as amended), updated 2024	✓	✓		✓		✓	✓	✓	✓	✓	H	N
Planning and Development Regulations 2001 (as amended)	✓	✓		✓		✓	✓	✓	✓	✓	H	N
Transcribed Irish legislation - European Union (Good Agricultural Practice for Protection of Waters) Regulations 2014 S.I. No. 31/2014 (as	✓	✓						✓			H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
amended 2023 S.I. No. 62/2023)												
Transcribed Irish legislation - Urban Wastewater Treatment Regulations 2001 S.I. No. 254/2001 (as amended 2010 S.I. No. 48/2010)	✓	✓		✓						✓	H	N
Transcribed Irish legislation - European Union (Drinking Water) Regulations 2014 S.I. No. 122/2014 (as amended	✓	✓								✓	H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
2017 S.I. No. 464/2017) The European Union Drinking Water Regulations 2023 (S.I 99/2023),												
Fisheries Consolidation Act, 1959	✓				✓						H	N
National Strategic Plan for Sustainable Aquaculture Development 2030	✓		✓	✓							L	N
Transcribed Irish legislation - European Communities (Birds and Natural Habitats)				✓							H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Regulations 2011 S.I. No. 477/2011(as amended 2015 S.I. No. 355/2015)												
Waste Management Act 1996 (as amended 2023)	✓	✓		✓	✓			✓	✓		H	N
Transcribed Irish legislation - Waste Management (Use of Sewage Sludge in Agriculture) Regulations 1998 (S.I. No.148 of 1998) as amended by the S.I. 267 of 2001	✓	✓		✓	✓			✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
EPA's Code of Practice for Domestic Waste Water Treatment Systems (published 2021)	✓	✓			✓						H	N
EPA's National Inspection Plan Domestic Waste Water Treatment Systems 2022 - 2026	✓	✓		✓	✓			✓			H	N
S.I. No. 32/2010 - Waste Management (Registration of Sewage Sludge Facility) Regulations 2010	✓	✓		✓	✓			✓	✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Bioeconomy Action Plan 2023-2025	✓	✓	✓		✓						H	N
The Maritime Area Planning Act 2021	✓	✓	✓	✓	✓	✓	✓		✓	✓	H	N
Marine Protected Areas Act 2022	✓	✓			✓	✓					H	N
Transcribed Irish legislation - European Communities (Air Quality Standards) Regulations 2011 S.I. No. 180/2011		✓	✓		✓				✓		L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
National Clean Air Strategy for Ireland (published 2023)		✓	✓		✓				✓		L	N
National Air Pollution Control Programme (published 2021)		✓	✓						✓		L	N
Transcribed Irish legislation - European Communities (Environmental Noise) Regulations 2006 SI. No. 140/2006		✓			✓					✓	L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Transcribed Irish legislation - European Communities (Environmental Noise) Regulations 2018 S.I. No. 549/2018		✓			✓					✓	L	N
Planning and Development Act 2024	✓	✓	✓	✓		✓	✓	✓	✓	✓	H	N
Heritage Act 2018	✓			✓	✓		✓				L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023		✓		✓	✓	✓	✓				L	N
National Monuments Act 2004 (as amended)		✓		✓		✓	✓	✓			L	N
Architectural Heritage and Historic Monuments Act 1999		✓					✓				L	N
Our Sustainable Future, a Framework for Sustainable Development for Ireland	✓	✓	✓	✓	✓		✓	✓			H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Project Ireland 2040: Our Plan, National Planning Framework First Revision 2025	✓	✓	✓				✓	✓			H	Y
Water Services Policy Statement 2024 - 2030	✓	✓	✓									N
Capital Investment Plan 2020-2024 (Uisce Éireann)	✓	✓									L	N
Climate Action Plan 2025(	✓	✓	✓					✓			H	Y

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Grid Implementation Plan 2023–2028											L	N
Ireland's State of the Environment Report 2024											H	N
Water Action Plan 2024 (A River Basin Management Plan for Ireland)	✓	✓	✓	✓							H	Y
Fifth Nitrates Action Programme 2022-2025	✓	✓	✓	✓							H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Project Ireland 2040 National Marine Planning Framework (2021)	✓	✓	✓	✓		✓	✓		✓	✓	H	Y
EPA Drinking Water Advice Note No. 8: Developing Drinking Water Safety Plans (2011)	✓	✓									H	N
Groundwater Protection Schemes (published 1999)	✓							✓			H	Y
Healthy Ireland Framework 2019-2025	✓	✓							✓		H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Agri-Food Strategy 2030 (Food Vision 2030 – A World Leader in Sustainable Food Systems)	✓	✓	✓	✓							H	N
Food Wise 2025		✓	✓								L	N
Fàilte Ireland's 10 Year Plan - Tourism Vision & Action Plan		✓									L	N
Fáilte Ireland Visitor Experience Development Plans		✓									L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Embracing Ireland's Outdoors National Outdoor Recreation Strategy 2023-2027	✓	✓		✓							L	N
People, Place and Policy – Growing Tourism to 2025		✓									L	N
VISION 2030 – An Irish Tourism Strategy for Growth											L	N
Tourism Policy Framework 2025-2030											L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Town Centre First: A Policy for Irish Towns (published 2022)		✓	✓			✓					L	N
Creating Green Infrastructure for Ireland: Enhancing Natural Capital for Human Wellbeing	✓	✓	✓	✓				✓			H	Y
Ireland's 4th National Biodiversity Action Plan 2023-2030	✓		✓	✓							H	Y
All-Ireland Pollinator Plan 2021-2025		✓		✓				✓			L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Biodiversity Climate Change Sectoral Adaptation Plan (published 2019)	✓		✓	✓							L	N
CAP Strategic Plan 2023-2027	✓	✓	✓								H	N
National Development Plan Review 2025		✓			✓						H	Y
Our Rural Future: Rural Development Policy 2021-2025		✓									H	Y

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Healthy Cities Programme (WHO) (Healthy Ireland Cities & Counties)		✓			✓						H	Y
National Peatlands Strategy 2015-2025	✓	✓	✓	✓				✓			L	N
Forestry Programme 2023-2027		✓	✓	✓							L	N
A Waste Action Plan for a Circular Economy - Ireland's National Waste Policy 2020-2025	✓	✓	✓	✓		✓		✓	✓		H	Y

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
National Hazardous Waste Management Plan 2021 – 2027 (EPA)	✓	✓	✓	✓				✓	✓		L	N
Circular Economy and Miscellaneous Provisions Act (2022)	✓		✓	✓				✓			H	N
Whole of Government Circular Economy Strategy 2022	✓		✓	✓				✓			H	Y
National Landscape Strategy for Ireland 2015-2025	✓	✓	✓	✓		✓	✓	✓			L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Regional Seascape Character Assessment for Ireland (published 2020)	✓	✓									L	N
National Climate Change Adaptation Framework	✓	✓	✓	✓		✓	✓	✓	✓		H	Y
Ireland's National Policy Position on Climate Action and Low Carbon Development 2014 (subsequently provided for in the Climate Action and Low Carbon Development Act 2015)	✓	✓	✓	✓				✓			H	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Energy White Paper 2015: Ireland's Transition to a Low Carbon Energy Future 2015-2030		✓	✓								H	N
Offshore Renewable Energy Development Plan II (OREDP II), 2022		✓	✓	✓		✓					L	N
National Energy and Climate Plan 2021-2030		✓									L	N
Heritage Ireland 2030	✓	✓	✓	✓		✓	✓	✓			L	Y

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Architectural Heritage Protection Guidelines for Planning Authorities (published 2011)							✓				L	N
Uisce Éireann Strategies and Plans												
Water Services Strategic Plan (2050) Uisce Éireann	✓	✓	✓	✓	✓		✓	✓	✓		H	Y
National Water Resources Plan (2021) and Regional Plans (2021-2023) - Uisce Éireann	✓	✓	✓	✓			✓				H	Y

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
National Wastewater Sludge Management Plan 2016 (currently being updated as Bioresources Plan) Uisce Éireann	✓	✓	✓	✓	✓			✓	✓		H	Y
Biodiversity Action Plan (Uisce Éireann 2021)												Y
Lead in Drinking Water Plan Uisce Éireann	✓	✓									L	Y
Uisce Éireann Interim Pesticide Strategy: A collaborative approach	✓	✓						✓			L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
with catchment stakeholders (published 2021)												
Regional and Local												
Regional Spatial and Economic Strategy (RSES) for the Southern Region of Ireland	✓	✓	✓	✓		✓	✓	✓			H	Y
Regional Tourism Strategy (currently being developed by Fáilte Ireland)	✓	✓									L	Y

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Cork City, Harbour and East Cork Destination and Experience Development Plan (published 2024)		✓									L	Y
Catchment Flood Risk Assessment and Management Programme (CFRAM) for Cork area	✓	✓	✓	✓	✓	✓	✓	✓			H	Y
The Planning System and Flood Risk Management – Guidelines for Planning Authorities (the 'FRM		✓									L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Guidelines') (published 2009)												
Cork County Development Plan 2022-2028	✓	✓	✓	✓		✓	✓	✓			H	Y
Cork Metropolitan Area Transport Strategy (CMATS) 2040	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	L	N
Cork County Council Climate Adaptation Strategy draft 2024-2029	✓	✓	✓	✓							H	Y

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Draft Cork City Council Climate Action Plan 2024-2029	✓	✓	✓	✓							H	Y
Cork County Local Economic and Community Plan (LECP) 2024-2030		✓									H	Y
Cork City's Local Economic and Community Plan (LECP) 2024-2029		✓									H	Y
Visit Cork Sustainability Policy 2023-2030		✓									L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Cork City Heritage and Biodiversity Plan 2021-2026	✓	✓	✓	✓			✓				H	Y
Múscraí Heritage Plan: Conservation, Management and Interpretation Plan 2018-2032		✓				✓	✓				L	N
Cork City Landscape Study for Cork City Council (Cork City Green and Blue Infrastructure Study) 2022						✓					L	N

Policy, Plans and Programmes	SEA Topics										Review Screening	Cumulative Assessment
International, National, Regional and transboundary – Legislation and Policy/Plans/Strategies	Water Environment	Population, Economy, Tourism and Recreation, and Human	Climate Change	Biodiversity, Flora and Fauna	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality	Noise and Vibration	Policy, Plans or Programmes with some relevance to the CWS and SEA - screening Direct /higher relevance- H Indirect relevance - L	Screened for relevance for inter plan cumulative/ in combination assessment Y – yes N- No
Cork County Council Draft Recreation and Amenity Policy 2024												Y
Cork County Council Noise Action Plan 2024-2028										✓	L	N
Cork Agglomeration Area Noise Action Plan 2024-2028										✓	L	N

Appendix B Environmental Assessment of Options and Approaches

See separate Volume