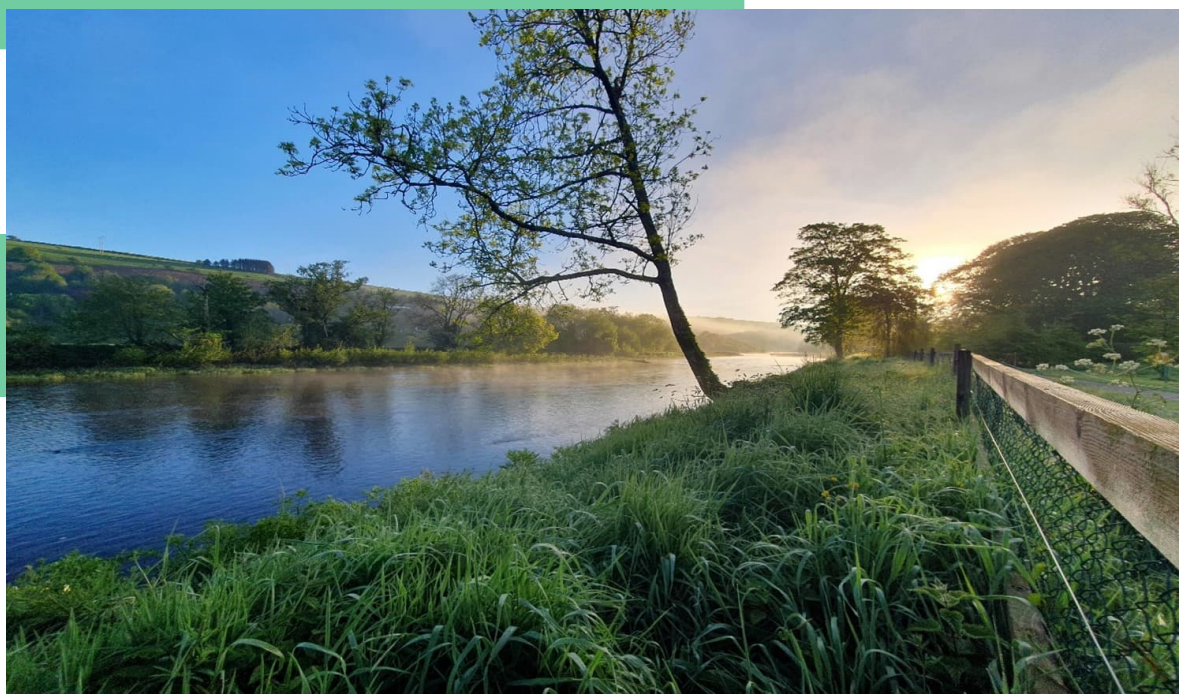
January 2026

Draft Cork Wastewater Strategy

Natura Impact Statement



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Acronyms and Abbreviations

Term	Definition
AA	Appropriate Assessment
AESI	Adverse Effect on Site Integrity
BOD	Biological Oxygen Demand
CMA	Cork Metropolitan Area
CRU	Commission for Regulation of Utilities
CWS	Cork Wastewater Strategy
EIA	Environmental Impact Assessment
ELV	Emission Limit Values
EPA	Environmental Protection Agency
EQS	Environmental Quality Standards
ESDL	Environmentally Sustainable Discharge Limits
EU	European Union
LSE	Likely Significant Effect
MCA	Multi Criteria Assessment
MRP	Molybdate Reactive Phosphorus
NSPM	National Wastewater Sludge Management Plan
NIS	Natura Impact Statement
NPF	National Planning Framework
NPWS	National Parks and Wildlife Service
PE	Population Equivalent
QI	Qualifying interest
RBMP	River Basin Management Plan
rUWWTD	recast Urban Wastewater Treatment Directive
RWRP	Regional Water Resources Plan
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
RSES	Southern Regional Spatial and Economic Strategy
SWO	Stormwater Overflow
WFD	Water Framework Directive
WSSP	Uisce Éireann Water Services Strategic Plan

Term	Definition
WW	Wastewater
WWDL	Waste Water Drainage Licence
WwTP	Wastewater Treatment Plant
ZoI	Zone of Influence

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.
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.
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 (alien) species with serious negative consequences for their new environment.
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.

Glossary Term	Definition
Mitigation	The implementation of measures designed to reduce the predicted effects of a plan or project on the environment.
Natura 2000	Natura 2000 is a European network of important ecological sites.
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 1PE is defined as being equivalent to 60g of BOD per day.
Qualifying interest	The specific habitats and/or species for which a site is designated as either a Special Area of Conservation or a Special Protection Area
RAMSAR site	An international designation for an important wetland site under the Ramsar Convention.
Special Area of Conservation (SAC)	An international designation for habitats and/or species under the EC Habitats Directive.
Special Protection Area (SPA)	A site of international importance for birds and their habitats, designated as required by the EC Birds Directive.
Strategic Environmental Assessment (SEA) Environmental Report	Strategic Environmental Assessment (SEA) is a process for the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme, before a decision is made to adopt the plan or programme. SEA aims to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development. Strategic Environmental Assessment (SEA) of plans and programmes is required by European Directive 2001/42/EC ('the SEA Directive').
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 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 Introduction

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.

Uisce Éireann is regulated by:

- The economic regulator, the Commission for Regulation of Utilities (CRU), which is charged with protecting the interests of the customer. The CRU also approves funding to enable Uisce Éireann to deliver the required services to specified standards in an efficient manner.
- The environmental regulator, the Environmental Protection Agency (EPA), which sets standards and enforces compliance with European Union (EU) and national regulations for drinking water supply and wastewater discharge to water bodies. The EPA liaises with the Health Service Executive in matters of public health.

1.2 Cork Wastewater Strategy

Uisce Éireann have identified the need for a strategic approach to a drainage assessment for the Cork Metropolitan Area (CMA). The CMA is a major regional metropolitan area, identified as such in the National Planning Framework 2040 (NPF) (DHPLG, 2018a) and in the Regional Spatial and Economic Strategy (RSES) 2020-2032 (Southern Regional Assembly, 2020) 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. This projected population and associated economic growth will result in a significant increase in water supply and as a result demands on the existing wastewater infrastructure within the area which is now being challenged to keep pace with this growth and an increased demand for new serviced lands.

Uisce Éireann have identified the need for a strategic approach to a drainage assessment for the CMA based on the predicted increase in population identified above, current compliance challenges at a number of wastewater treatment plants and sewerage networks, wastewater treatment capacity requirements to deal with current and future loads from the CMA and associated pressures on the receiving waters from wastewater discharges within the CMA. Particular challenges facing the CMA can be summarised as:

- Impact on wastewater systems as a result of rapid growth;
- Non-compliance challenges associated with existing Wastewater Treatment Plants (WwTP) and sewerage networks;
- Pressure on installed wastewater treatment capacity;
- Deterioration of receiving waters;
- Impact of the recast Urban Wastewater Treatment Directive (EU 2024/3019) (rUWWTD) on existing wastewater systems; and
- Climate change.

The delivery of a sustainable, integrated wastewater drainage systems for the CMA requires a strategic approach to drainage planning which incorporates the needs of stakeholders, supporting economic growth, allowing for climate change and meeting the demand of a growing population. A sustainable drainage solution must be consistent with statutory obligations and regulatory drivers designed to meet both national and international environmental objectives e.g., Water Framework Directive (WFD) and rUWWTD, and those

intended to address the impacts of climate change. The quality and resilience of wastewater drainage infrastructure in Ireland needs to be maintained in the face of increasing challenges and pressures brought about by factors including rapid growth in major metropolitan centres such as Cork and, increased demand for new serviced land for housing, commercial developments, and industry. The uncertainty associated with the most likely, emerging climate change scenario necessitates an initial step-back to develop and adopt a whole-system assessment approach. Figure 1-1 below shows some key facts about Uisce Éireann's wastewater services and infrastructure in the study area for Draft Cork Wastewater Strategy (CWS).

Figure 1-1 Uisce Éireann statistics in the Cork Wastewater Strategy study area

The Draft 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) (see Section 1.7). This Natura Impact Statement (NIS) is required under the Habitats and Birds Directives and was prepared in alignment with the accompanying Strategic Environmental Assessment (SEA) Environmental Reports.

Furthermore, the management of wastewater was addressed in the recent Uisce Éireann Water Services Strategic Plan (WSSP) 2050. The NIS of the WSSP 2050 concluded that for actions relating to wastewater management the following mitigation was required "*Lower tier plans and/or interventions will be required to comply with the Habitats Regulations and undergo AA where necessary*." The Draft CWS is a lower tier plan of the WSSP 2050.

1.3 Development of the Strategy

The Draft CWS assesses wastewater treatment and network infrastructure in the CMA to identify what future investment will be required in the medium and long term and the report identifies sustainable wastewater strategies and projects for the growing CMA. This addresses challenges posed by climate change, supports economic and population growth and aims to avoid adverse environmental impacts over three horizon periods (time periods over which it is possible to plan with reasonable accuracy) up to 2080.

The Optioneering and Solutions Development Report identified and documented the preferred strategic drainage and treatment solutions for the CMA, assessing the full range of potential solutions targeting strategy horizons in 2030, 2055, and 2080. The Strategy identifies a timeline for initiation of projects by considering the individual catchment needs and any interactions with other agglomerations within the CMA. When a project is designated to be initiated by 2055, for example, it does not necessarily mean the project will commence in that year. Instead, it indicates that the necessary steps to initiate the project will be undertaken in the years between 2030 – 2055. The assessment methodology followed a 5-stage process to ensure the optimum technical solution was selected considering the functionality of the solution, taking into account whole-life cost while balancing sustainability requirements, and maximising benefits in the process. An overview of these 5-stages is provided in Figure 1-2.

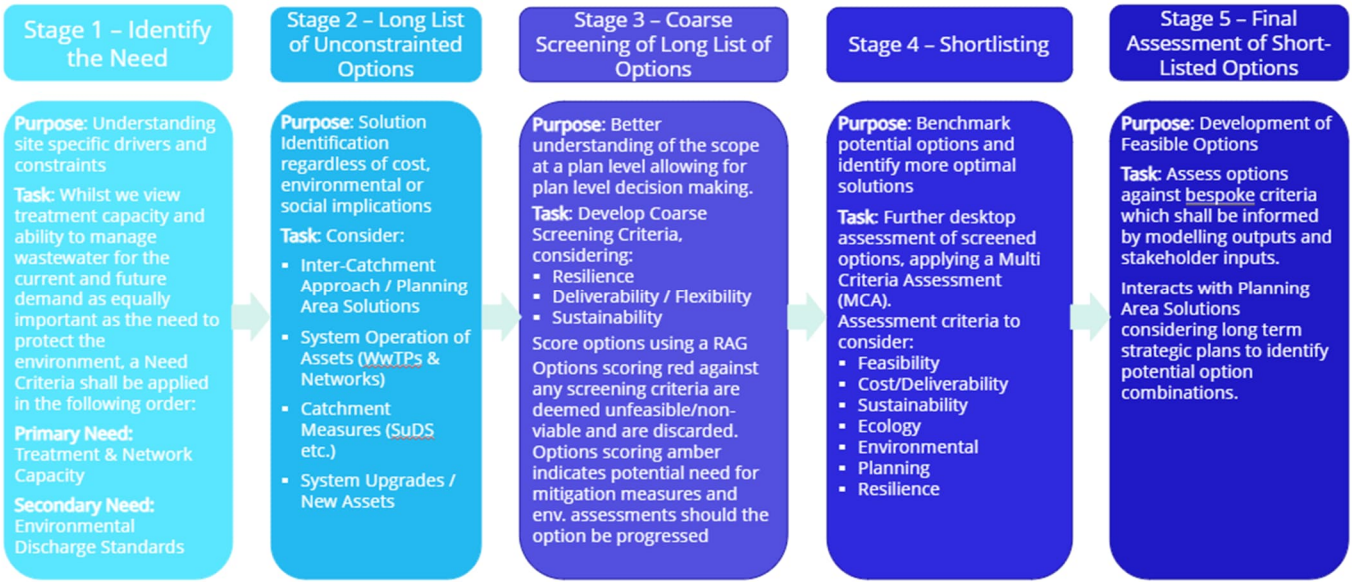

Figure 1-2 Assessment Methodology Overview

Key aspects of the process included;

- Addressing complex factors such as environmental constraints, treatment plant capacities, and network hydraulics.
- Considering regional interdependencies within the CMA.
- Evaluating solutions based on whole-life costs, energy efficiency, and carbon emissions.
- Incorporating risk assessments for transparent, evidence-based decision-making.
- Ensuring progressive and integrative solutions across different time horizons.

Stage 3 of the process – Coarse Screening of Long List of Options – focused on gaining a comprehensive understanding of the required works, enabling informed decision-making at the plan level. The stage was characterised by an evaluation of options, considering several key factors: resilience, deliverability, flexibility and sustainability. A Red-Amber-Green (RAG) matrix was employed to score the options systematically and provide a clear visual representation of each option's viability. Coarse Screening incorporated screening against environmental criteria, including the potential for impacts on the Natura 2000 site network, to ensure

early identification of potential environmental impacts and regulatory compliance, providing a foundation for more detailed assessments in later stages of the decision-making process.

Stage 4 of the process – Fine Screening of Long List of Options – was a detailed desktop assessment of options that have passed Stage 3. It employed Multi Criteria Assessment (MCA) to evaluate potential benefits and impacts across key criteria. Environmental and sustainability considerations comprised an assessment of the potential benefits and disbenefits across a range of factors such as water environment, biodiversity, GHG emissions, energy efficiency, climate resilience and circular economy. This stage also specifically considered impacts on the Natura 2000 site network. The criteria for each option were subject to rigorous and objective assessment using uniform scoring criteria, based on best publicly available datasets. The scoring mechanism employs a seven-point Likert scale, ranging from -3 to 3 for each criterion. Potential unavoidable and non-mitigatable effects on a European site were scored -3; full details of the process can be found in the Draft CWS and Optioneering and Solutions Development reports. Options where the possibility of appropriate mitigation measures could be employed to avoid an adverse effect on a European site were scored -1 or -2 depending on the site, its qualifying features, their condition and complexity of potential mitigation measures which would be required.

The fifth and final stage of the Optioneering and Solutions Development process – Final Assessment of Short List – involved developing and assessing feasible options against bespoke criteria, which were defined by modelling and stakeholder outputs. The goal of this stage was to produce an outline design and associated estimated cost for each Feasible Option which were then considered for incorporation into the overall Recommended Approach.

Environmental impacts and costing of projects will be further reviewed at the project level. Where necessary, any projects that are progressed following the Draft CWS will require individual environmental assessments, including, where appropriate, Environmental Impact Assessment and Appropriate Assessment, in support of planning applications (where a project requires planning permission) or in support of licensing applications (for example, for new abstractions). Any such applications will also be subject to public consultation.

1.4 Screening

The screening for Appropriate Assessment (AA) of the Draft CWS identified that all possible options for wastewater management arising from the Draft 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. The AA Screening Report for the Draft CWS is provided at Appendix A to this NIS.

1.5 This Report

This is the NIS which 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 Draft 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.

This report examines the potential for the Draft CWS on its own or in combination with other plans and projects to result in an adverse effect on one or more European site(s) in view of the sites' conservation objectives.

1.6 Legislative Context for Appropriate Assessment

Habitats and species of European importance are provided legal protection under the EU Habitats Directive 92/43/EEC (the Habitats Directive). The Directive protects habitats and species of community interest through the establishment and conservation of an EU-wide network of sites known as the Natura 2000 network (hereafter referred to as European sites[1]). European sites comprise Special Areas of Conservation (SACs[2]) and Special Protection Areas (SPAs). Potential SPAs (pSPAs) and candidate SACs (cSACs) are afforded the same protection as fully designated sites.

Public Authorities and Appropriate Assessment

The duties of public authorities in relation to nature conservation are stated in the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) (the 2011 Regulations). Uisce Éireann is defined as a 'public authority' for the purposes of the 2011 Regulations.

The first step of the AA process is to carry out a screening to establish whether, in relation to a particular plan or project, there is potential for LSEs to any European site(s). Specifically, Regulation 42(1) states:

"Subject to Regulation 42A, a Screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site."

Regulation 42A applies to situations where the Minister for Housing, Local Government and Heritage is the person responsible for making or adopting the relevant plan or project, so is not applicable in respect of the Draft CWS.

Regulation 42(6) states that:

"The public authority shall determine that an Appropriate Assessment of a plan or project is required where the plan or project is not directly connected with or necessary to the management of the site as a European site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site."

In the context of Article 6(3), Uisce Éireann must carry out Screening for AA of the Draft CWS to assess whether, on the basis of objective scientific information, the Draft CWS individually or in-combination with other plans or projects, is likely to have a significant effect on a European site. If this screening determines that it cannot be excluded, on the basis of objective scientific information, that the Draft CWS, individually or in combination with other plans or projects, will have a significant effect on a European site, then Uisce Éireann must determine that an Appropriate Assessment of the Draft CWS is required.

To assist in carrying out any Appropriate Assessment that may be required following screening, Uisce Éireann must prepare a Natura Impact Statement (NIS), which is a report comprising the scientific examination of a plan or project and the relevant European site or European sites, to identify and characterise any possible implications of the 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 including, but not limited to, any

[1] The term Natura 2000 network was replaced by 'European site' under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.
[2] Candidate SAC (cSAC) are afforded the same protection as SACs. The process of making cSAC into SACs by means of Statutory instrument has begun and while the process if ongoing the term SAC will be used to conform with nomenclature used in the National Parks and Wildlife Services (NPWS) databased.

plans, maps or drawings, scientific information or data required to enable the carrying out of an Appropriate Assessment.

In carrying out the full Appropriate Assessment, the Habitats Regulations 2011 require Uisce Éireann to take into account:

- The NIS;
- Any other plans or projects that may, in combination with the plan or project under consideration, adversely affect the integrity of a European site;
- Any supplemental information furnished in relation to any such report or statement;
- If appropriate, any additional information furnished in relation to the NIS;
- Any information or advice obtained by Uisce Éireann;
- If appropriate, any written submissions or observations made to Uisce Éireann in relation to the application for consent for the Draft CWS; and
- Any other relevant information.

Following the Appropriate Assessment process, Uisce Éireann must then only adopt the Draft CWS after having determined that the Draft CWS shall not adversely affect the integrity of any European site(s).

1.7 Overlap with Strategic Environmental Assessment

A Strategic Environmental Assessment (SEA) of the Draft CWS is being carried out concurrently with the AA process. SEA is required under the EU Council Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive) and are transposed into national legislation via regulations[3]. The purpose of SEA is to enable plan-making authorities to incorporate environmental considerations into decision-making at an early stage and in an integrated way throughout the plan making process and to:

- Identify, evaluate and describe the potential significant environmental effects of implementing the Draft CWS;
- Ensure that identified significant effects are communicated, mitigated and that the effectiveness of mitigation is monitored;
- Identify beneficial and adverse effects, and to ensure these are communicated; and
- Provide opportunity for stakeholder and public involvement.

There is a degree of overlap between the requirements of the SEA and AA and, in accordance with best practice, an integrated process has been and will be carried out between the development of the Draft CWS, the SEA and the AA, such as sharing of baseline data where relevant, cohesive assessment of the potential ecological effects of the Draft CWS on European sites, their qualifying features, and clarification on more technical aspects of the Draft CWS. These processes together will inform and shape the development of the Draft CWS. Uisce Éireann has prepared an Environmental Report for the purposes of SEA, which is being published for consultation along with this NIS and the Draft CWS.

Figure 1.2 below outlines the SEA and AA Stages and how they align with the development of the Draft CWS.

[3] In Ireland, the SEA Directive has been transposed into national legislation through S.I. No. 435 of 2004 (European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, as amended by S.I. No. 200 of 2011 (European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011). Also, S.I. No. 436 of 2004 (Planning and Development (Strategic Environmental Assessment) Regulations 2004, as amended by External link S.I. No. 201 of 2011 (Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011).

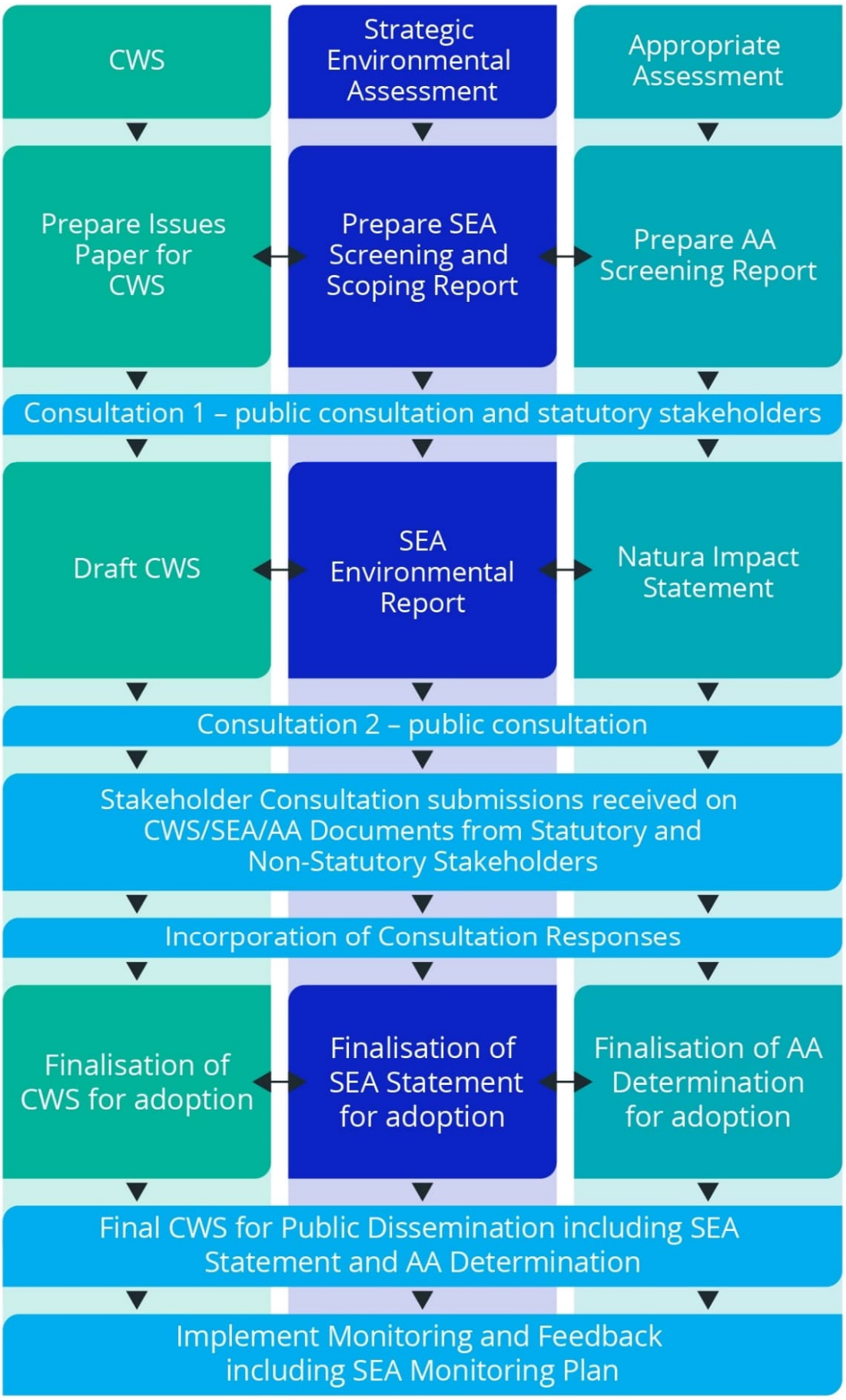

Figure 1.2: Draft CWS development with SEA and AA process

1.8 Consultation

Consultation is a mandatory requirement in the SEA process and responses often make specific reference to the AA process. Uisce Éireann is presenting the Draft CWS for consultation alongside this NIS and the SEA Environmental Report. Uisce Éireann will take into account submissions and observations relevant to Appropriate Assessment (AA) matters as part of the overall AA process. The AA Determination to be issued alongside the final CWS will record how those submissions have informed the overall AA.

2 Assessment Methodology

2.1 Stages of Appropriate Assessment

The methodology for undertaking assessment in relation to AA has evolved from European Commission guidance "Commission Notice Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC 2021/C 437/01" (September, 2021) and Irish guidance from the former Department of Environment, Heritage and Local Government "Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities" (Revised December 2010). The entire process can be broken down into four stages (Article 42/43 of the Habitats Regulations 2011), as outlined below. If at any stage in the process it is determined that there will be no implications for the European site in view of the site's conservation objectives, the process is effectively completed. The four stages are described below.

Stage 1 - Screening for Appropriate Assessment (AA)/Test of Likely Significant Effects: Screening determines whether an AA is required by determining if the project or plan is likely to have a significant effect(s) on any European site(s) either alone or in-combination with other plans or projects, in light of the site's conservation objectives (see Figure 2.1).

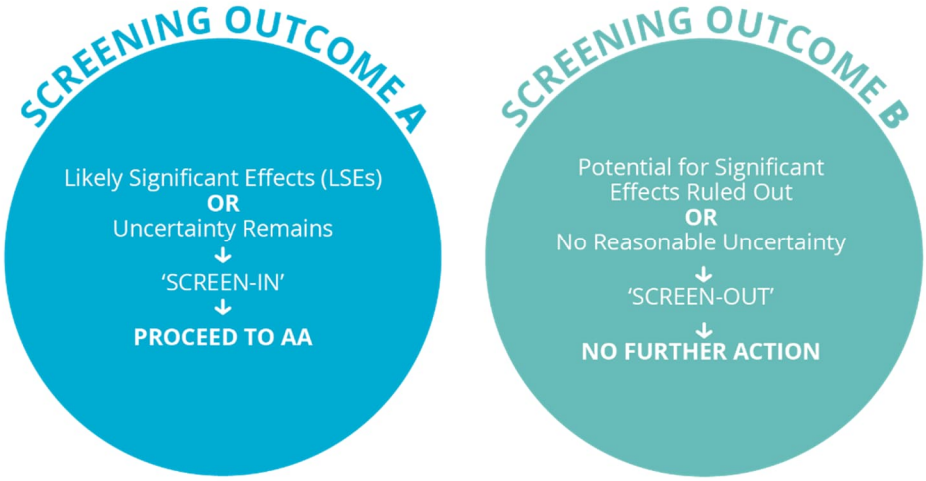

Figure 2.1: Screening for Appropriate Assessment

Stage 2 – Appropriate Assessment: If the screening has determined that AA is required, the competent authority then considers the effect of the project or plan on the integrity of the European site(s). The AA considers the structure and function of European sites, their conservation objectives and effects from the project/plan both alone and in-combination with other projects or plans. Where Adverse Effects on Site Integrity (AESI) are identified, mitigation measures are proposed as required to avoid compromising the integrity and conservation objectives of the European site(s). The information and data to inform the AA process is documented within an NIS. This is provided to the competent authority to facilitate its AA of the plan or project (along with other factors including submissions and observations received through public consultation, as detailed above).

Stage 3 – Assessment of Alternative Solutions: Following AA, including mitigation proposals, if AESI remain, or uncertainty remains and the project/plan is to be progressed, an Assessment of Alternative Solutions is required under the provisions of Article 6(3/4) of the Habitats Directive. This process examines the alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. If no alternatives exist, or all alternatives would result in adverse effects on the integrity of a European site, then either the process moves to the next stage or the project is abandoned.

Stage 4 – Imperative Reasons of Over-Riding Public Interest (IROPI): In the unlikely event where an Assessment of Alternative Solutions fails to identify any suitable alternatives, then for a project or plan to be progressed it must meet the requirements of IROPI. In this case the provisions of Article 6(3) cannot be met and therefore, the provisions of Article 6(4) are used. If in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed, thus compensatory measures are implemented to maintain the coherence of the European site network in the face of adverse effects to the integrity of the site(s).

2.2 Approach to AA of the Draft CWS

The approach to this AA takes consideration of the strategic nature of the Draft CWS and uses objective information to determine whether the strategy, has LSEs for European sites in the manner outlined in *Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland* (Court of Justice of the European Union, Case C-6/04, Opinion of Advocate General Kokott)[4] and the Waddenzee case (Court of Justice of the European Union, C-127/02).

2.2.1 Application of the AA process at Plan level

In the context of AA screening, when applying the 'test of significance' the test is of the "likelihood" of effects rather than the "certainty" of effects. In accordance with the Waddenzee Judgement[5], a likely effect is one that cannot be ruled out based on objective information and is underpinned by the precautionary principle and the test of beyond reasonable scientific doubt. This test therefore sets a low bar: a plan should be considered 'likely' to have an effect if the competent authority (in this case Uisce Éireann) is unable (on the basis of objective information) to exclude the possibility that the plan could have significant effects on any European site, either alone or in-combination with other plans or projects. An effect is considered to be 'significant' if it could undermine a European site's conservation objectives.

The methodology for undertaking screening for AA and NIS/AA can be applied at both a project and plan level assessment. The suitability of the data and information used and any decisions flowing from its use in the Draft CWS assessment have to meet the provisions and requirements of the Habitats Directive. The strategic assessments at the plan level will inevitably be undertaken at a higher level than would be the case for projects. However, the Draft CWS does not provide consent for any future projects arising from it or future iterations of the Plan but, demonstrates that the protection for the European site network is suitably considered and achievable in the context of the remit of the Plan. Also, any future project level AA screenings and/or NIS will have regard for the plan level AA screening as the projects have been identified or specified from the Draft CWS. To note, all of Uisce Éireann's projects are screened for AA. Therefore, where required further environmental assessments (including AA screening and if needed AA) will be undertaken as individual projects as the Draft CWS progress to implementation. These will be obligatory in support of planning applications (where a project requires planning permission) or in support of licensing applications (for example, for waste water discharge licences).

2.2.2 Compliance of the Draft CWS with the Habitats Directive

The Draft CWS identifies needs in terms of quantity, quality and reliability, and uses a methodology (Option Assessment Methodology) to develop interventions to address this need. The AA Screening Report for the Draft CWS is provided in Appendix A, and at a high level, assessed the option types that were likely to arise from the Draft CWS; that is because not all of the Recommended Approaches were fixed at the time the AA screening was undertaken. The AA screening for the Draft CWS concluded that the management option types arising from the Draft CWS had the potential to give rise to LSEs on European sites, in view of the sites'

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62004CC0006 (Accessed January 2025)
[5] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:62002CJ0127 (Accessed January 2025)

conservation objectives. Accordingly, AA of the Draft CWS was considered to be required. All of the Preferred Approaches, once fixed (following MCA analysis), were considered for their potential for LSE as part of this NIS for the Draft CWS.

2.3 Guidance documents in relation to Appropriate Assessment

The requirements of Article 6 of the Habitats Directive for the Draft CWS have been applied having regard to the following guidance documents:

- AA of Plans and Projects in Ireland: Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010a);
- Appropriate Assessment Screening for Development Management. OPR Practice Note PN01 (Office of the Planning Regulator, 2021).
- Assessment of Plans and Projects in Relation to Natura 2000 Sites – Methodological Guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021a);
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (European Commission, 2021b);
- Communication from the Commission on the Precautionary Principle (European Commission, 2000);
- Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission (European Commission, 2007);
- Marine Natura Impacts Statements in Irish Special Areas of Conservation. A Working Document (Department of Arts, Heritage and the Gaeltacht, 2012); and
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission, 2019).

The following circulars have also been used:

- AA under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 and PSSP 2/10 (Department of Environment, Heritage and Local Government, 2010b);
- AA of Land Use Plans. Circular Letter SEA 1/08 & NPWS 1/08 (Department of Environment, Heritage and Local Government, 2008a);
- Compliance Conditions in respect of Developments requiring (1) Environmental Impact Assessment (EIA); or (2) having potential impacts on Natura 2000 sites. Circular Letter PD 2/07 and NPWS 1/07 (Department of Environment, Heritage and Local Government, 2007a);
- Guidance on Compliance with Regulation 23 of the Habitats Directive. Circular Letter NPWS 2/07 (Department of Environment, Heritage and Local Government, 2007b); and
- Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments. Circular L8/08 (Department of Environment, Heritage and Local Government, 2008b).

2.4 Guiding Principles and Case Law

A number of cases have been brought to both the national and European courts in relation to the AA process. Irish departmental guidance (Department of Environment, Heritage and Local Government, 2010a)[6] in relation to AA was published over 10 years ago. Therefore, recent case law has, in many cases, superseded this guidance. However, recent guidance from the OPR (2021)[7] in relation to AA Screening has now been published and considered in this assessment. Relevant case law, European Court of Justice (ECJ) rulings and European Commission (EC) publications have also been considered in the preparation of the NIS for the Draft CWS.

[6] https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf (Accessed, January 2024)
[7] https://www.opr.ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf (Accessed, January 2024)

2.5 Consideration of the protection of European sites

The Draft CWS including the methodology for option selection has the protection of European sites and environmental considerations at the forefront. Set out below are the measures employed to ensure the protection of European sites.

At the Coarse Screening stage environmental considerations, including impacts to European sites, were at the forefront of the assessment and options considered to have a significant impact on the environment were removed.

The Fine Screening stage identified at a high-level the potential for LSEs on a European site emerging from an option. Scoring took into account the possibility of being able to apply standard and/or good practice mitigation measures, and information regarding the European site, its qualifying interests and their condition, as well as the site's conservation objectives. Options which were assessed to potentially 'significantly worsen the environment' with respect to a European site were not taken forward as a Recommended Approach.

The European sites considered in the Zone of Influence of the Draft CWS and their conservation objectives are listed within Appendix B of this report. The WDF waterbodies within the Draft CWS are in Appendix C, and the Third Schedule invasive species recorded within the Draft CWS are in Appendix D.

Plan Level Protection of European sites

Plan level protection of European sites has been provided for within the Draft CWS. As outlined above, options with potential for significant impacts on the environment, including options that could result in AESI were removed at coarse screening. Furthermore, as part of the feedback loop from the NIS for the Draft CWS, a better approach to options with LSE i.e. options with -1 to -3 score for biodiversity at Fine Screening was identified where possible (especially in respect to -3 scores due to the potential complexity of implementation at the project stage e.g. an option that meets the Draft CWS objectives and doesn't score -3).

Because it is possible that all of the potential impacts identified for even a -3 scoring option can be entirely ruled out through project level investigation and analysis or avoided through project level mitigation, the -3 scoring option for biodiversity may be progressed as the Recommended Approach. General and option specific mitigation has been provided for within the Draft CWS (see Section 6.3.1-6.3.5 of this NIS).

The Recommended Approach is the approach that performs best, against the approach categories set out in section 7.2.1 of the Draft CWS, at plan level. The identification of a Preferred Approach under this plan does not confer any consent to develop a project, nor does it preclude other feasible options being considered subsequently. The Preferred Approach as well as alternatives will be taken forward for consideration at project level and subject to further detailed assessments and Statutory Processes in the usual way.

2.6 Assessment Methodology

2.6.1 "Source-pathway-receptor" model

The "source-pathway-receptor" model was used to assess the Preferred Approach for each sub-catchment (see Section 4.3) of the Draft CWS. This assessment was undertaken in consideration of all potential impact pathways connecting elements of the Draft CWS to European sites in view of their conservation objectives.

2.6.2 Desktop study

The following data sources were consulted for background environmental information in producing this NIS:

- Online data available on European sites as held by the NPWS from www.npws.ie – including site synopsis, conservation objectives and other relevant supporting documentation;
- GIS data for European site boundaries obtained in digital format online from the NPWS;

- Article 17 Overview Report Volume 1 (NPWS, 2019a);
- Article 17 Habitat Conservation Assessments Volume 2 (NPWS, 2019b);
- Article 17 Species Conservation Assessment Volume 3 (NPWS, 2019c);
- National Biodiversity Action Plan 2017-2021 (Department of Culture, Heritage and the Gaeltacht, 2017);
- Draft Ireland's 4th National Biodiversity Action Plan 2023-2027 (Department of Housing, Local Government and Heritage, 2022);
- Environmental Protection Agency (EPA) waterbody and water quality data online at https://gis.epa.ie/EPAMaps/;
- The Environmental Sensitivity Mapping (ESM) online at https://enviromap.ie/;
- Water Action Plan 2024: River Basin Management Plan for Ireland 2022 – 2027 (Department of Housing, Local Government and Heritage, 2024); and
- Data from the Geological Survey Ireland (GSI).

2.6.3 Options and the Zone of Influence

When assessing likely Zone of Influence (ZoI) for all options the "source-pathway-receptor" model was applied. European sites with a hydrological link to any given option/Study Area were considered to be within the ZoI. As such, sites that are outside the boundary of the Draft CWS were included in the assessment where there is an effects pathway.

The Draft CWS covers Uisce Éireann's operational area within and surrounding the CMA. Therefore, all European sites within this region (core baseline area – see Section 3.5 of the Draft CWS SEA Scoping Report) and European sites with potential effects pathways located outside the region were initially considered to be potentially within the ZoI of the Draft CWS.

2.6.4 Re-Screening for this NIS

As stated in Section 1.4 a screening for AA was undertaken and is available in Appendix A. This screening was undertaken with limited information on what the Draft CWS would comprise. Therefore, during the development of the Draft CWS, as new information came to light, re-screening of European sites and their relevant qualifying interests was undertaken. This was to ensure that the conclusions of the AA screening report remained valid as the Draft CWS progressed through the coarse and fine screening stages, and onto the identification of the Recommended Approach. This re-screening also ensured that any additional European sites potentially affected were identified as well as removing any European sites where there were no effects pathways.

2.6.5 Transboundary Effects

The Draft CWS solely covers Uisce Éireann's operational area within and surrounding the CMA which is approximately 240km south of the border between the Republic of Ireland and Northern Ireland and is therefore not a transboundary plan. There are also no shared WFD catchments between the Draft CWS and Northern Ireland. The re-screening confirmed that there would be no transboundary effects.

3 Cork Wastewater Strategy

3.1 Background and Introduction

The Draft 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.

Wastewater source control will form a part of the strategy. This will aim to ensure good regulation of trade effluent discharging to sewer and that industrial micropollutants are more appropriately treated at source, rather than at end-of-pipe in Uisce Éireann wastewater treatment plants. It will also aim to promote an optimal balance between industry providing their own wastewater treatment and treatment in Uisce Éireann treatment plants.

The CMA is a major regional metropolitan area, identified as such in the National Planning Framework (NPF) and in the Regional Spatial and Economic Strategy (RSES) 2020-2032 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 Draft CWS. 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 just over 307,500 as determined from the Census 2022 (representing about 13% of the Republic of Ireland), with the population projected to increase to 476,000 in 2040. The study area (see Figure 3-1) contains over 25 towns and villages in addition to the urban centre of Cork City. The Draft CWS does not cover settlements and agglomerations, (an urban settlement (village, town or city area) which is connected through a pipe network to a wastewater treatment plant), within the study area which are not currently served by Uisce Éireann assets, with the exception of cases where wastewater loads from these areas would affect the study area.

The Draft 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 Draft CWS is to produce a report that will identify sustainable wastewater strategies and projects for the growing CMA. This will 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 will include 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 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 Uisce Éireann assets, an examination on the resilience of energy and power security forms part of the Draft CWS. To ensure the strategy remains relevant and representative of the changing environment, it will be regularly revised.

Figure 3-1: Cork Wastewater Strategy Overview.

3.2 CWS Vision and Objectives

3.2.1 Overview of the Vision and Objectives

The vision of the Draft 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 Urban Wastewater Treatment Directive and Integrated Urban Wastewater Management Plans.
- Our part in delivering EU Water Framework Directive (WFD) 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 Draft 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 future demand and support economic growth for the CMA. The key objectives of the Draft CWS are as follows:

- Development of a sustainable wastewater strategy for the CMA consistent with the WFD and rUWWTD 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 National Planning Framework (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 restore the environment, support social and economic growth that are consistent with Uisce Éireann Water Services Strategic Plan (WSSP) 2050 and other Uisce Éireann plans and strategies.
- Evaluation of alternative solutions and identification of the optimum wastewater drainage solutions.
- To develop an adaptable strategy where outcomes can be adjusted linked to influences like climate and projected population change.

3.2.2 Compliance with the Water Framework Directive and other Legislation

As indicated above, the vision and objectives of the Draft CWS include the need to meet WFD objectives and its subsidiary legislation. The WFD (Directive 2000/60/EC) requires all EU Member States to protect and improve water quality in all waters to achieve good ecological status by 2015 or, at the latest, by 2027. It was given legal effect in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003). The WFD also requires that management plans be prepared on a river basin basis known as River Basin Management Plans (RBMPs) whose aim is to protect and improve the water environment. Uisce Éireann have a role to play in delivering the objectives of the River Basin Management Plan 2022 – 2027[8] through the management of urban wastewater and urban run-off.

The European Communities Environmental Objectives (Surface Water) Regulations 2009 implements the WFD establishing legally binding quality objectives for all surface waters and Environmental Quality Standards (EQSs) for pollutants, with the purpose of implementing protection measures. 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.

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

[8] DHLGH (2024). https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/

3.3 Cork Wastewater Strategy Outline

3.3.1 Overview

The Draft CWS presents an overview of the Options Development and Solutions Approach outcome for the CMA. Full details can be found in the optioneering and strategy reports (Uisce Éireann, 2025ab) which comprise;

- An overview of the legislature and regulations which impacted the strategy decision making process.
- An overview of the assessment of current wastewater infrastructure in the CMA.
- The context of current and forecast population growth, economic development and tourism and recreation within the CMA.
- The Option Development Process for the Draft CWS which also presents the Feasible Options.

The Recommended Approach is the Feasible Option or combination of Feasible Options that provide the optimum solution to address the identified needs. Details of the Recommended Approach can be found below in Section 3.4. Further information regarding the Option Development process can be found below.

3.3.2 Option Development

A comprehensive breakdown of the Optioneering Methodology is provided in the Optioneering and Solutions Development Report (Appendix 6 of Uisce Éireann (2025b)). This detailed report offers an in-depth analysis of the methodological approach employed in the strategic planning process.

The Optioneering and Solutions Development process for the 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 1.3 of this report.

Recognising the significance of interactions and interdependencies among all individual catchments within the CMA, the CMA was segmented into smaller, interconnected sub-catchments, each comprising of multiple WwTPs as shown in Figure 3-2 and Table 3-1 below. Settlements not currently served by a WwTP but that are incorporated into the overall strategy were included here such as Monard, Ballymore and Leamlara. 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.

Following the optioneering phase, several Feasible Approaches were identified for each sub-catchment. These Approaches incorporated combinations of the highest-scoring options derived from the MCA. Each potential Feasible Approach underwent thorough analysis and consideration, taking into account the broader context of the Draft 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 Draft CWS.

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 Draft 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 Draft 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 Draft 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 Draft 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.

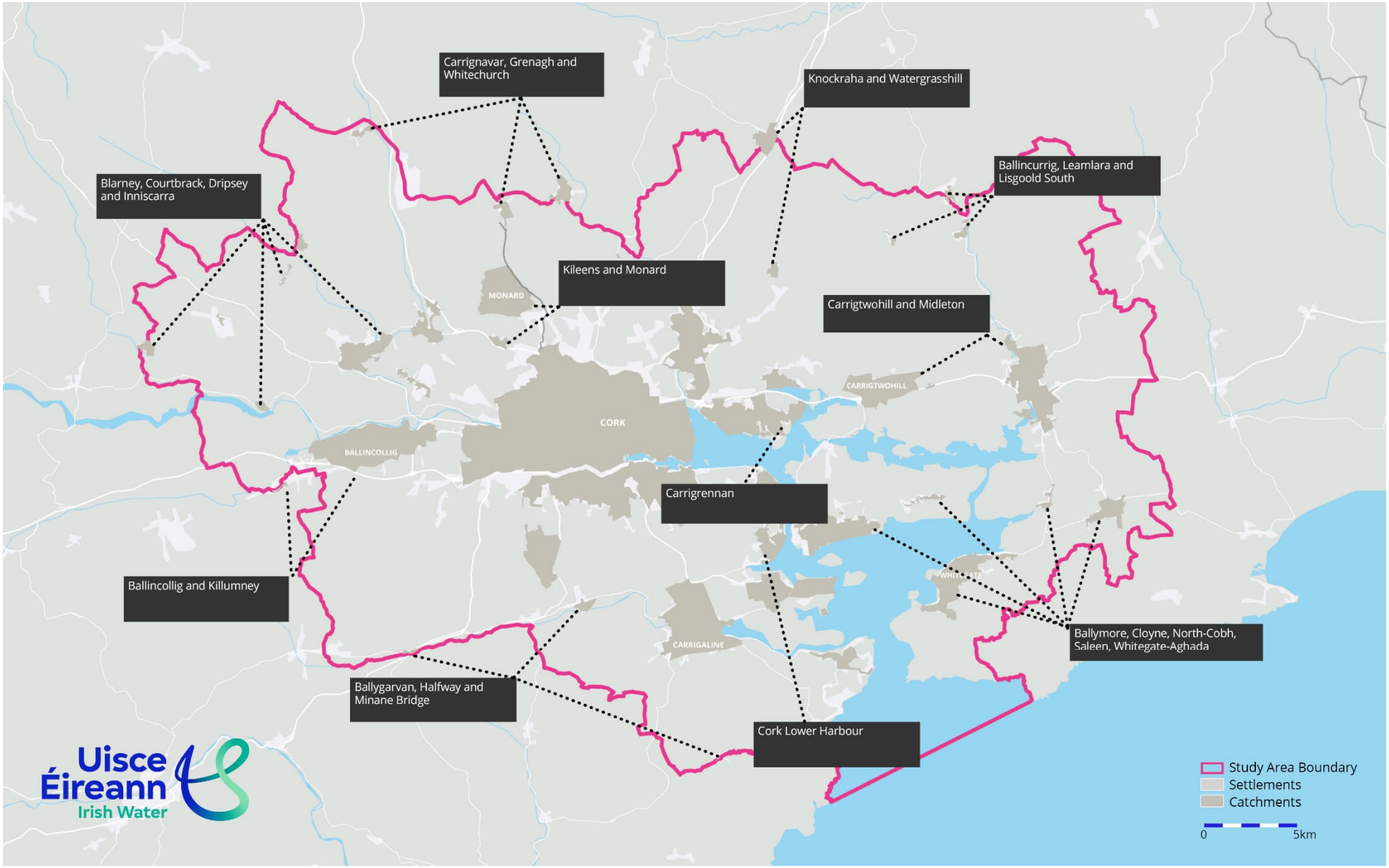

Figure 3-2: Sub-catchments within the Cork Wastewater Strategy.

Table 3-1: List of Sub-catchments within the Draft CWS

Sub-Catchment	Agglomerations
Sub-Catchment 1	Blarney WwTP
	Courtbrack WwTP
	Dripsey WwTP
	Inniscarra WwTP
Sub-Catchment 2	Kileens WwTP
	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 South WwTP
	Lisgoold North WwTP

3.3.3 Water Quality Modelling

Water quality modelling was undertaken as part of the development of the Draft 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. The Water Quality Modelling methodology is set out in detail in the report in the Draft CWS Appendix 5.

EQSs in Ireland, set under the WFD, establish maximum acceptable concentrations for priority substances and other pollutants in surface waters to achieve "good chemical status". Each freshwater catchment was assigned by the EPA a WFD status objective based on upstream water quality and ecological designation. The target ecological status for a receiving waterbody is set as High if either the waterbody has a formal High-status WFD objective, or the upstream ambient concentration lies in the lower 75% of the High-status EQS.

In the freshwater catchments, numerous rivers have an upstream concentration that exceeds the EQS for Biological Oxygen Demand (BOD), these are the Butlerstown, Glashaboy, and Blarney rivers. For ammonia, they are the Glashaboy, Blarney, and Bride (Lee) rivers. For Molybdate Reactive Phosphorus (MRP), they are the Butlerstown, Glashaboy, Owenboy, Owenacurra, Blarney, Martin, Shournagh, Bride (Lee), and Dripsey. In these rivers, achieving point-source environmentally sustainable discharge limits (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.

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 are designated Good status objective, with shellfish areas imposing additional nitrogen (Total Inorganic Nitrogen, DIN) and MRP limits to safeguard shellfish quality.

Following water quality modelling conducted at the existing WwTP discharge points, ESDLs based on compliance with the appropriate EQS were determined based on projected population equivalent (PE) loading to the WwTP across the current and future planning horizons.

The quantified ESDLs enabled the development and prioritisation of the proposed planning horizons of the Draft CWS. Coarse screening on the long list of options included the modelling of water quality ESDL requirements for existing and potential discharge locations. The approach aimed to identify options that could support WFD waterbody objectives and comply with expected discharge requirements.

3.4 Recommended Approach

3.4.1 Sub-catchment 1: Blarney, Courtbrack, Dripsey & Inniscarra

In the 2080 strategy horizon, this sub-catchment solution (see Figure 3-3) proposes that untreated wastewater from Inniscarra and Blarney will be transferred to Carrigrennan whilst Courtbrack and Dripsey will be upgraded and continue to operate as treatment plants. Blarney will operate as a pumping station. This solution will also result in a reduction in the volume of discharges entering the Shournagh/Lee catchment but an increase in that coming from Carrigrennan.

Blarney

Blarney WwTP is located approximately 9.5km northwest of Cork City and provides wastewater services to the town of Blarney. An upgrade of the works was commissioned in 2013. The treated wastewater is discharged into the Shournagh River.

Blarney will be optimised to bring the plant to compliance in the 2030 strategy horizon. In the 2055 strategy horizon Blarney will be decommissioned and a new untreated wastewater pipeline will be constructed via Ballyvolane pumping station. This will transfer the untreated wastewater to Carrigrennan. Blarney will then continue to as a pumping station.

Courtbrack

Courtbrack WwTP is located approximately 16.5km northwest of Cork City, opposite the Drom Slí housing estate in Courtbrack village. It is a small sewage works commissioned in 2011 with a design capacity of 250 Population Equivalent (PE). The treated wastewater is discharged into the Shournagh River.

Courtbrack will be upgraded in the 2030 strategy horizon by 600PE to a new design capacity of 850PE and it will continue to operate as a WwTP. In the 2080 strategy horizon, there will be a capital replacement of 250PE.

Dripsey

Dripsey is a settlement located approximately 19km west of Cork City and 1km north of the River Lee at the Inniscarra Lake Reservoir. Dripsey WwTP was commissioned in 2022. The treated wastewater is discharged into the Dripsey River, which then flows into Lough Inniscara.

Dripsey will be optimised to bring the plant to compliance in the 2030 strategy horizon. It will be upgraded in the 2055 strategy horizon by 250PE and will continue to operate as a WwTP at 2080. There will also be a capital replacement of 600PE in the 2080 strategy horizon.

Inniscarra

Inniscarra WwTP serves the Inniscarra waterworks and three domestic bungalows adjacent to the WwTP. The Inniscarra agglomeration is located within the Inniscarra Water Treatment Plant site. The waterworks is located approximately 5km west of the town of Ballincollig. It was commissioned in 1993.

In the 2030 strategy horizon, Inniscarra will be decommissioned as a treatment plant to operate as a pumping station, and a new transfer pipeline constructed to Blarney WwTP. At 2055 and 2080, the plant will continue to operate as a pumping station.

Overall, discharges to watercourses of the River Lee catchment are expected to decline although the volume of untreated wastewater transferred to Carrigrennan will increase.

Whilst it is anticipated that the new pipelines will follow existing roads, this may not be possible as project level designs are developed. In addition, the new pipelines may potentially cross the Owennagearagh River and the Blarney River, tributaries of the Shournagh and therefore of the River Lee, and also a crossing of the River Bride.

Figure 3-3: Recommended Approach for Sub-catchment 1: Blarney, Courtbrack, Dripsey & Inniscarra.

3.4.2 Sub-catchment 2: Kileens and Monard

Kileens WwTP discharges to the Blarney River (see Figure 3-4). The Monard area currently has no WwTP but, as indicated below, a pumping station will be constructed here and all untreated wastewater transferred to Carrigrennan.

Kileens

Kileens WwTP is located approximately 1.5km to the west of Cork City and plant was commissioned in 2009. The WwTP has a design capacity of 600PE and the plant consists of a Preliminary Treatment (Screening), Primary Treatment (Primary Settlement) and Secondary Treatment (Rotating Biological Contactors BiolExtended Aeration and Clarifier) followed by Tertiary Treatment (Sand Filtration). All treated effluent from the WwTP drains by gravity to the Blarney River, located adjacent to the plant.

Kileens WwTP is currently overloaded. It is proposed to decommission the WwTP and transfer untreated wastewater to the Cork City Network at Northpoint Business Park, with flows being forwarded to Carrigrennan WwTP for treatment. This necessitates the construction of a 2.2km untreated wastewater pipeline and associated pumping station. The proposed Kileens pumping station will be designed to accommodate projected 2080 flows.

Monard

Monard is a proposed settlement northeast of Blarney; the existing catchment does not have a significant wastewater network and resultingly does not have an existing wastewater treatment process that is operated by Uisce Éireann. It is proposed to transfer untreated wastewater to an intermediate pumping station and ultimately to Carrigrennan WwTP for treatment. This necessitates the construction of a new twin main untreated wastewater pipeline and associated pumping station in the 2030 strategy horizon to connect with a new intermediate pumping station on the proposed Blarney to Ballyvolane pumping station transfer line (see Section 3.4.1). The proposed Monard pumping station will be designed to accommodate projected 2080 flows.

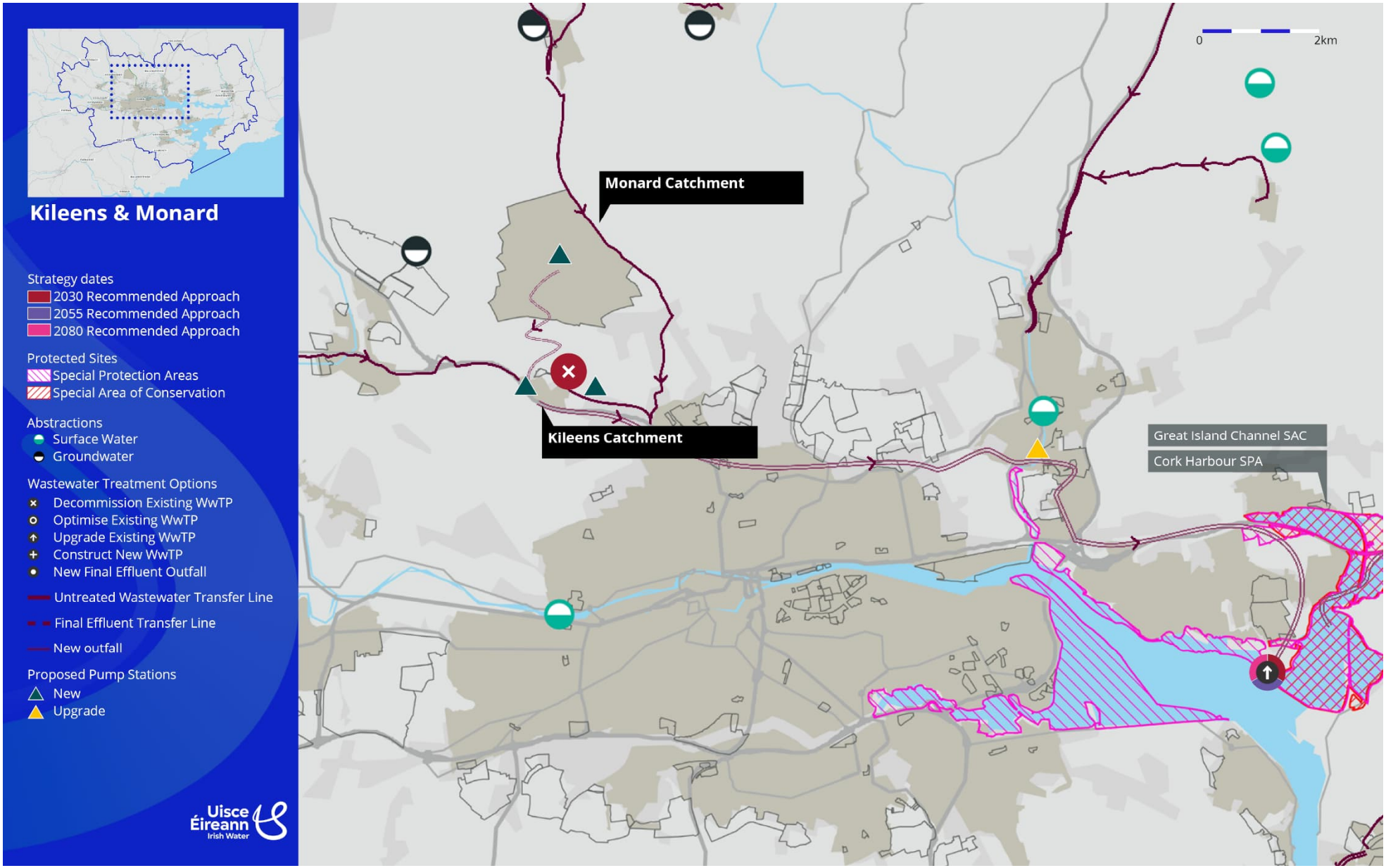

Figure 3-4: Recommended Approach for Sub-catchment 2: Kileens and Monard.

3.4.3 Sub-catchment 3: Carrignavar, Grenagh and Whitechurch

In the 2080 strategy horizon all untreated wastewater from this inter-catchment solution will be transferred to the Cork City network and therefore onto Carrigrennan (see Figure 3-5). All three sites are proposed to operate as pumping stations.

Carrignavar

Carrignavar WwTP is located approximately 8km north of Cork City and 2km east of Whitechurch in the Cloghnagashee River Valley. The WwTP has a design capacity of 300PE. All treated effluent from the WwTP drains by gravity to the Ballycaskin River, a tributary to the Glashaboy River, located adjacent to the plant. The existing wastewater treatment process is currently performing very poorly and is failing to achieve the discharge requirements specified within its wastewater discharge licence.

Carrignavar will be decommissioned in the 2030 strategy horizon and a new 3.8km pipeline constructed to transfer untreated wastewater to Whitechurch WwTP with associated pumping station. The plant will then continue to operate as a wastewater pumping station at 2055 and 2080.

Grenagh

Grenagh WwTP is located approximately 16km north of Cork City at Grenagh, County Cork. The WwTP has a design capacity of 1,200PE. Treated effluent from the plant is discharged to the River Martin, a tributary of the River Blarney. The existing wastewater treatment process has capacity for increased flows and is currently achieving the discharge requirements specified within its Waste Water Drainage Licence (WWDL), however the final effluent does not meet the Total Nitrogen ELV consistently.

At 2030, Grenagh will continue to operate as a WwTP but will be optimised to bring into compliance with ELVs, but in the 2055 strategy horizon it will be decommissioned and a new 9km pipeline constructed to transfer the untreated wastewater to Whitechurch WwTP. The plant will then continue to operate as a wastewater pumping station at 2080.

Whitechurch

Whitechurch WwTP is located at Farranstig, Whitechurch, County Cork, approximately 11km north of Cork City. The WwTP has a design capacity of 3,000PE and discharges treated effluent to the County Cork network.

At 2030, Whitechurch will continue to operate as a treatment facility having also received the untreated wastewater from Carrignavar. The final (treated) effluent will continue to be discharged to the Cork City Network. In the 2055 strategy horizon, the plant will be decommissioned and converted to a pumping station and all untreated wastewater, including that from Grenagh, will be pumped by a new transfer pipeline to Carrigrennan with an associated pumping station with 4,200PE capacity. The plant will then continue to operate as a wastewater pumping station at 2080.

Transferring all untreated wastewater to Carrigrennan should reduce the volumes going into these two catchments.

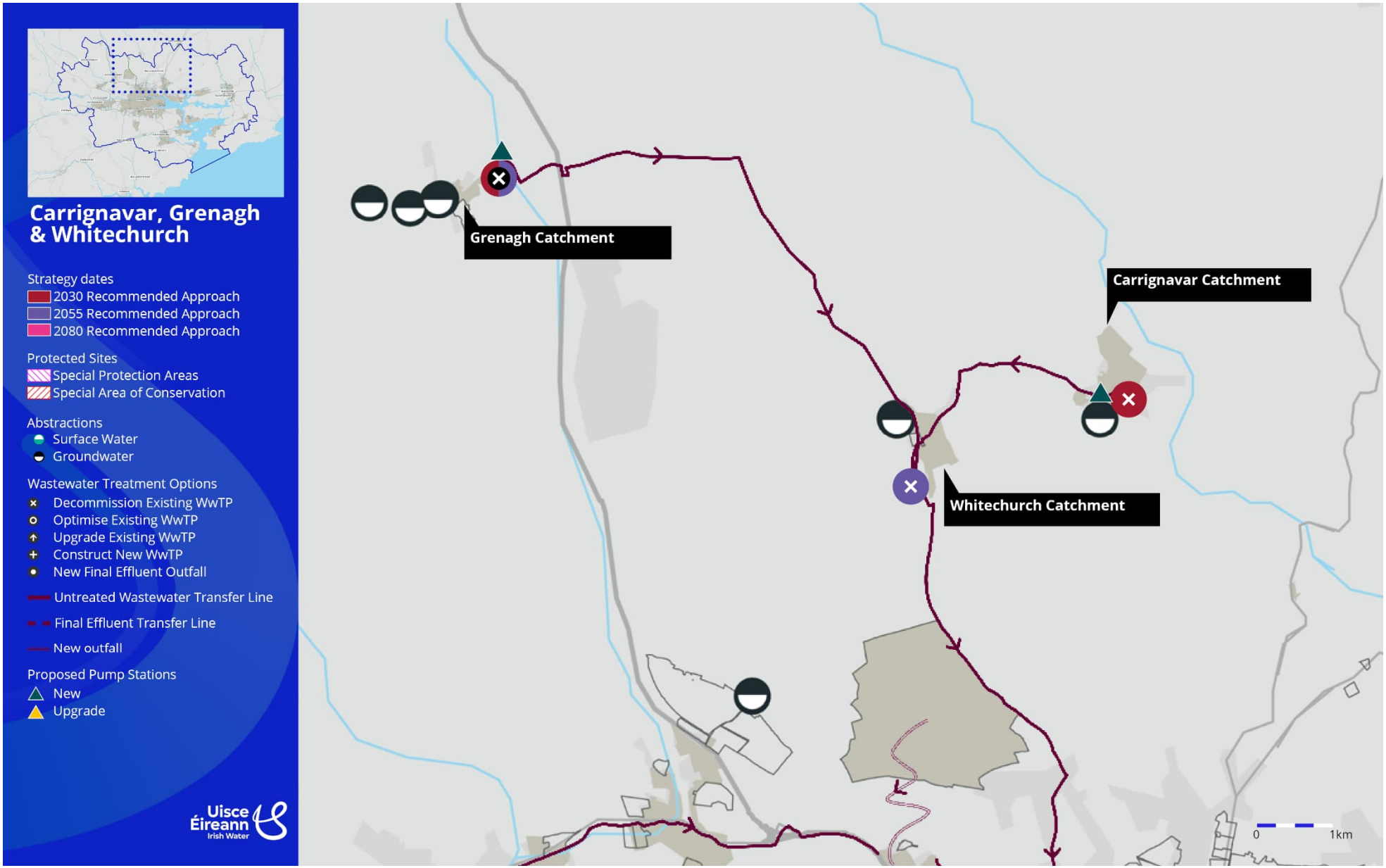

Figure 3-5: Recommended Approach for Sub-catchment 3: Carrignavar, Grenagh and Whitechurch

3.4.4 Sub-catchment 4: Knockraha and Watergrasshill

In the 2080 strategy horizon, both plants will have been decommissioned and converted to pumping stations (see Figure 3-6). All untreated wastewater is to be transferred to Carrigrennan via Glanmire Bridge pumping station for which a new pipeline is required.

Knockraha

Knockraha WwTP is located at Gogganstown, Knockraha, northeast of Cork city and was built in 2021. The treatment plant has a design capacity of 350PE and treated wastewater is discharged to a percolation area located 0.5km from Butlerstown River.

Knockraha is to be decommissioned in the 2030 strategy horizon to construct a new transfer pumping station. A new pipeline for untreated wastewater of approximately 7km will be constructed through roads to the existing Glanmire Bridge pumping station. This will then be pumped to Carrigrennan via the existing network. The Knockraha plant is proposed to continue to operate as a pumping station at 2055 and 2080.

Watergrasshill

Watergrasshill WwTP lies approximately 22km north of Cork city and serves the Watergrasshill catchment; it was commissioned in 2002. The treatment plant has a design capacity of 3,000PE and treated wastewater is discharged to a small stream Flesk (Bride) which is a tributary of the Blackwater River.

Watergrasshill is to be optimised in the 2030 strategy horizon to bring the plant up to compliance. In the 2055 strategy horizon, the plant will be decommissioned and converted to a pumping station. A new 10km pipeline for untreated wastewater will also be constructed through roads to the existing Glanmire Bridge pumping station. This will then be pumped to Carrigrennan via the existing network. The Watergrasshill plant is proposed to continue to operate as a pumping station at 2080.

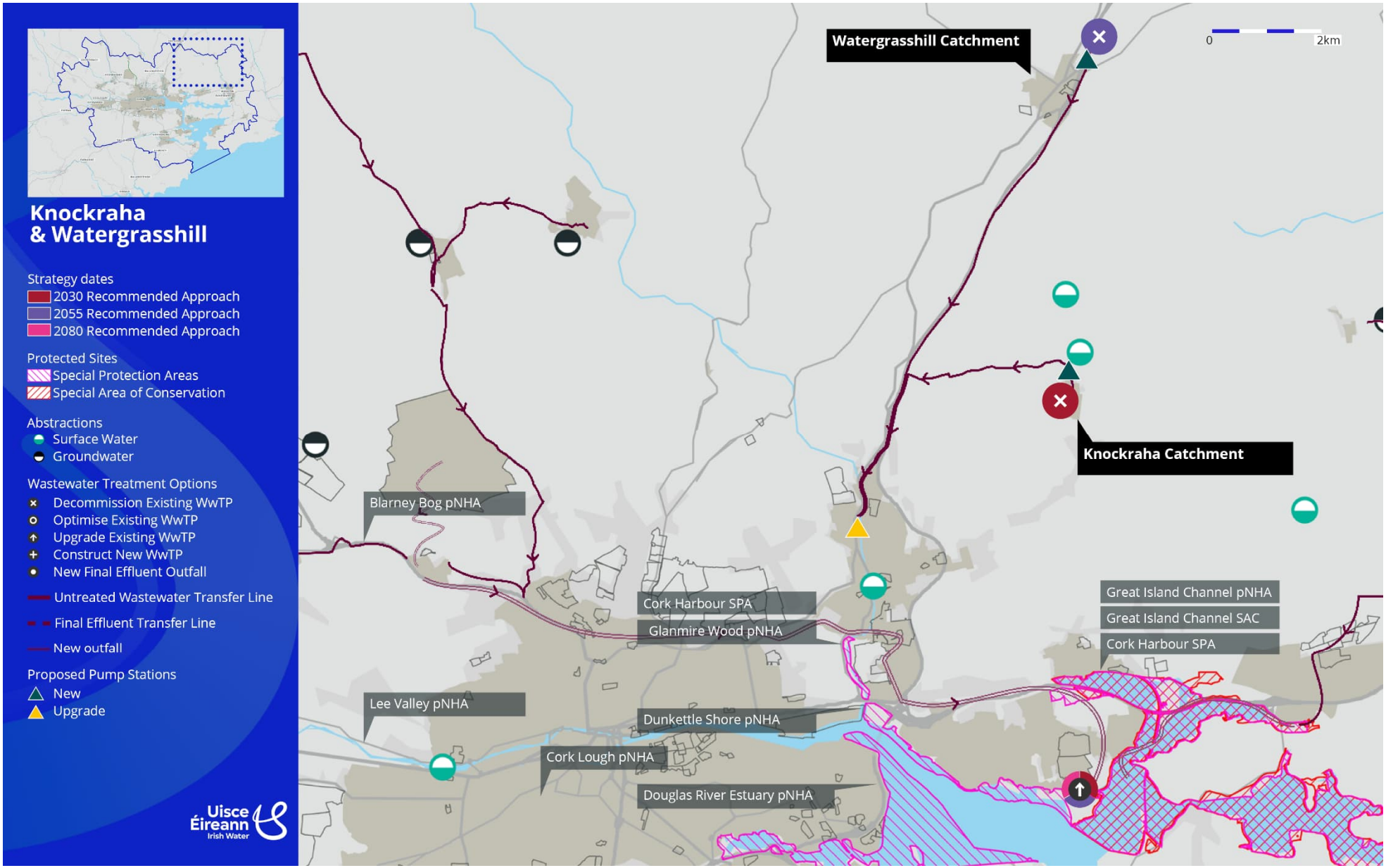

Figure 3-6: Recommended Approach for Sub-catchment 4: Knockraha and Watergrasshill

3.4.5 Sub-catchment 5: Carrigrennan

Carrigrennan WwTP is located at Little Island 11km east of Cork City centre. The treatment plant was commissioned in 2004 and has since had a mechanical and electrical upgrade which included the design and build of a phosphate removal plant and the installation of a new sludge dewatering system in 2021. The WwTP has a design capacity of 413,200PE.

The treated effluent discharges to Lough Mahon (see Figure 3-7). The outfall from Carrigrennan WwTP is approximately 520m downgradient from the boundary of Great Island Channel SAC.

For 2030 the Recommended Approach involves upgrading to provide tertiary treatment to meet Cork City growth as well as wastewater transfers from sub-catchments 1, 2, 3 and 4. In the 2055 strategy horizon, a 104,000PE upgrade of the tertiary WwTP is proposed and the construction of a new 558,000PE quaternary treatment plant. In addition, the existing final effluent discharge outfall will be upsized as a result of the increased loads. At the 2080 horizon treatment capacity will be increased by a further 41,000PE.

This approach addresses several key challenges identified at Carrigrennan WwTP, including insufficient modelled organic capacity, network surcharge and flooding, and non-compliant SWOs. In addition, this will improve water quality at the discharge location, which is of high importance here due to the presence of European sites.

This strategy for Carrigrennan WwTP is part of a broader, integrated approach for managing wastewater in the Cork Metropolitan Area (CMA). The decision to transfer untreated wastewater from Blarney to Carrigrennan aligns with the larger wastewater management framework, taking advantage of Carrigrennan's current capacity.

Carrigrennan will, as indicated above, require to be updated/replaced at various times in the 2080 strategy horizon to take account of additional untreated wastewater from:

- Blarney and Inniscarra;
- Kileens and Monard;
- Carrignavar, Grenagh and Whitechurch; and
- Knockraha and Watergrasshill.

All upgrade and replacement works are anticipated to be able to be completed within the existing site footprint and the discharge point within Cork Harbour will remain the same.

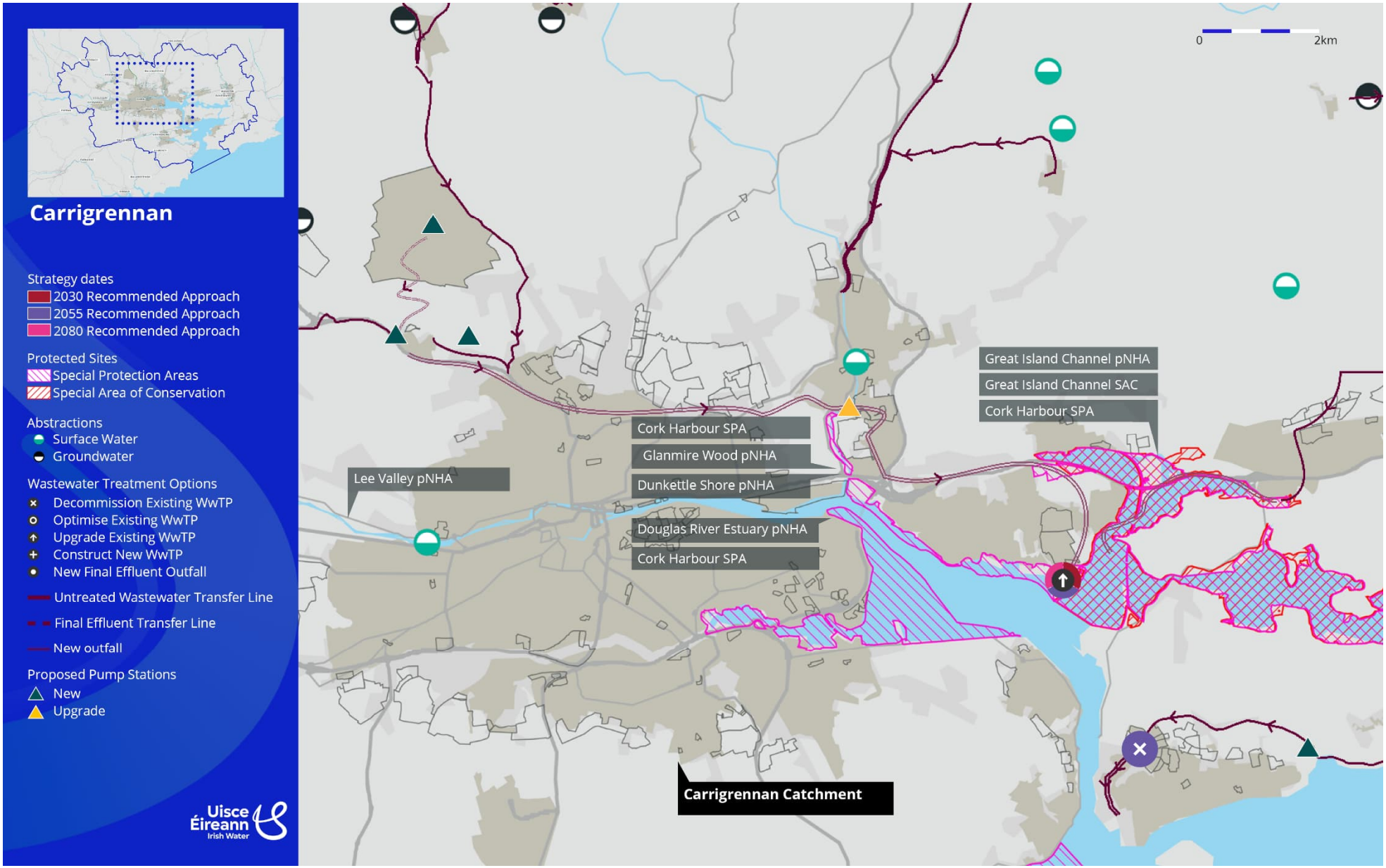

Figure 3-7: Recommended Approach for Sub-catchment 5: Carrigrennan.

3.4.6 Sub-catchment 6: Ballygarvan, Halfway and Minane Bridge (River Valley)

In the 2080 strategy horizon, all three WwTPs will operate as pumping stations and pump all untreated wastewater to Cork Lower Harbour WwTP (see Figure 3-8).

Ballygarvan

Ballygarvan WwTP is located in Ballygarvan village in County Cork and lies 9km south of Cork City. The sewage plant was commissioned in 2010 and had a mechanical and electrical upgrade in 2013. The treatment plant has a design capacity of 634PE. Treated wastewater from the plant is discharged to the Owenboy/Owenabue River which discharges into Cork Harbour near Crosshaven.

Ballygarvan will be decommissioned in the 2030 strategy horizon with a new 5.4km pipeline for untreated wastewater constructed via the Carrigaline pumping station to Cork Lower Harbour WwTP. The plant will then continue to operate as a pumping station at 2055 and 2080.

Halfway

Halfway WwTP is located approximately 12km southwest of Cork City and 13km northeast of Bandon. Commissioned in 2005, the plant is designed for 450PE. After treatment, the effluent is discharged into the Owenboy/Owenabue River immediately to the south of the site, which subsequently flows into Cork Harbour near Crosshaven.

Halfway will be optimised in the 2030 strategy horizon to ensure the plant is compliant. It will continue to operate as a treatment plant at 2055 but will be decommissioned as a treatment plant in the 2080 strategy horizon, operating as a pumping station. A new 8.4km pipeline to Ballygarvan pumping station will be constructed and from there the untreated wastewater will be transferred to Cork Lower Harbour WwTP via the earlier constructed pipeline.

Minane Bridge (River Valley)

The Minane Bridge WwTP is located approximately 7km south of Carrigaline. The WwTP is located adjacent to the River Valley housing estate, which it was designed to serve via gravity pipeline. The plant was commissioned in 2008 and has a design capacity of 250PE but is currently only treating at 150PE. Minane Bridge WwTP discharges into the Minane River and into Cork Harbour.

Minane Bridge will be decommissioned in the 2030 strategy horizon with a new 5km pipeline for untreated wastewater constructed via the Carrigaline pumping station to Cork Lower Harbour WwTP. The plant will then continue to operate as a pumping station at 2055 and 2080.

This Recommended Approach for Ballygarvan, Halfway and Minane Bridge must also consider the interactions between this catchment and others within the CMA, most notably Cork Lower Harbour WwTP. It is imperative that Cork Lower Harbour WwTP is upgraded to ensure it has the capacity required to treat the additional loads (see Section 3.4.8).

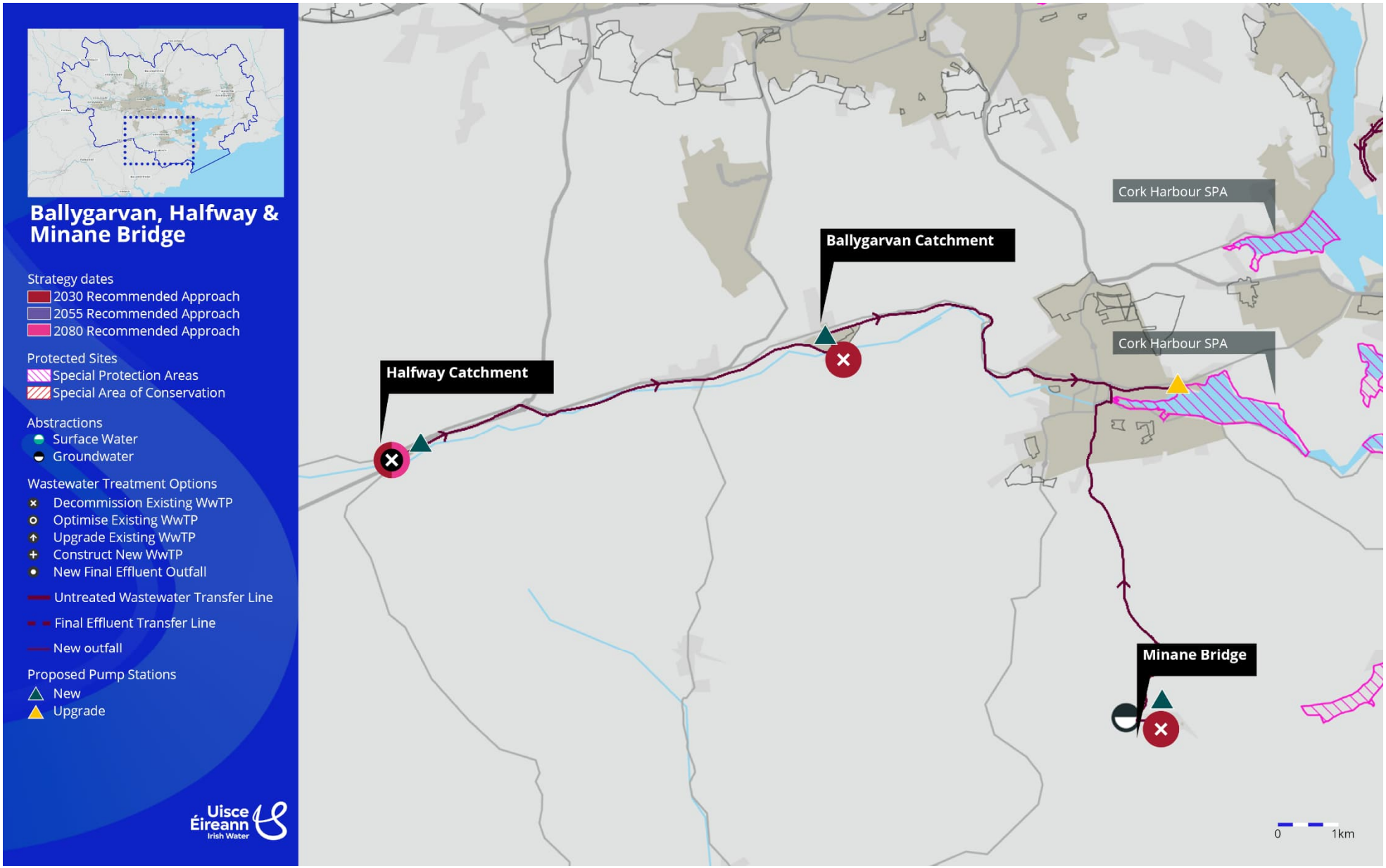

Figure 3-8: Recommended Approach for Sub-catchment 6: Ballygarvan, Halfway and Minane Bridge

3.4.7 Sub-catchment 7: Ballincollig and Killumney

In the 2080 strategy horizon, Ballincollig will have been replaced by a new greenfield site plant with untreated wastewater being transferred to it (see Figure 3-9). Cork Lower Harbour (see sub-catchment 8) will have been upgraded and replaced as it will be receiving additional untreated wastewater from Ballygarvan, Halfway and Minane Bridge.

Ballincollig

Ballincollig WwTP is located at Ballincollig approximately 8.5km west of Cork city and caters for the wastewater from the suburb of Ballincollig and its environs in County Cork. The wastewater from the agglomeration is partially combined and has an estimated 33% industrial input. There are four pump stations on the network namely Maglin, Leesdale, Carrigrohane and Powder Mills pump stations. Presently, wastewater drainage from the town is conveyed by the collection system to the existing WwTP to the north of the town.

The WwTP and has a design capacity of 33,000PE and accepts septic sludge from other Council run sites including Ovens and Killumney which is discharged with the raw influent. Road tankers delivering landfill leachate and septic tank contents discharge directly into the last manhole (MH) on the incoming sewer upstream of Inlet Works (within the WwTP site). The MH cover is manually lifted to facilitate each delivery.

The original plant dates from 1966 and was upgraded in 1982 with the most recent in 2013/2014. Treated wastewater is discharged to the River Lee.

In the 2030 strategy horizon, it is proposed to initiate a new greenfield 64,000PE tertiary WwTP to be constructed north of the River Lee. This will include the construction of an untreated wastewater transfer pipeline across the river. The existing plant will be decommissioned and will operate as a pumping station. Discharge will be to the same point on the River Lee although a new outfall is expected to be required.

At 2055, the new WwTP will be upgraded by a further 8,000PE and a new quaternary 72,000PE plant constructed. The plant will continue to operate at 2080.

Killumney

Killumney WwTP is located at in the centre of the Killumney village. The plant is situated adjacent to the river Bride and approximately 5.8km southwest of Ballincollig and was commissioned in 1999. The agglomeration has a PE less than 500. There is an ongoing project involving the decommissioning of Killumney WwTP and connecting the flows from Killumney WwTP and Grange Manor WwTP to be transferred via a rising main for treatment at Ballincollig WwTP.

Killumney will be decommissioned as part of an ongoing project and all untreated wastewater will be transferred to Ballincollig, and onto the new WwTP when it comes online. Killumney will continue to operate as a pumping station at 2055 and 2080. The Killumney to Ballincollig pipeline is an ongoing project.

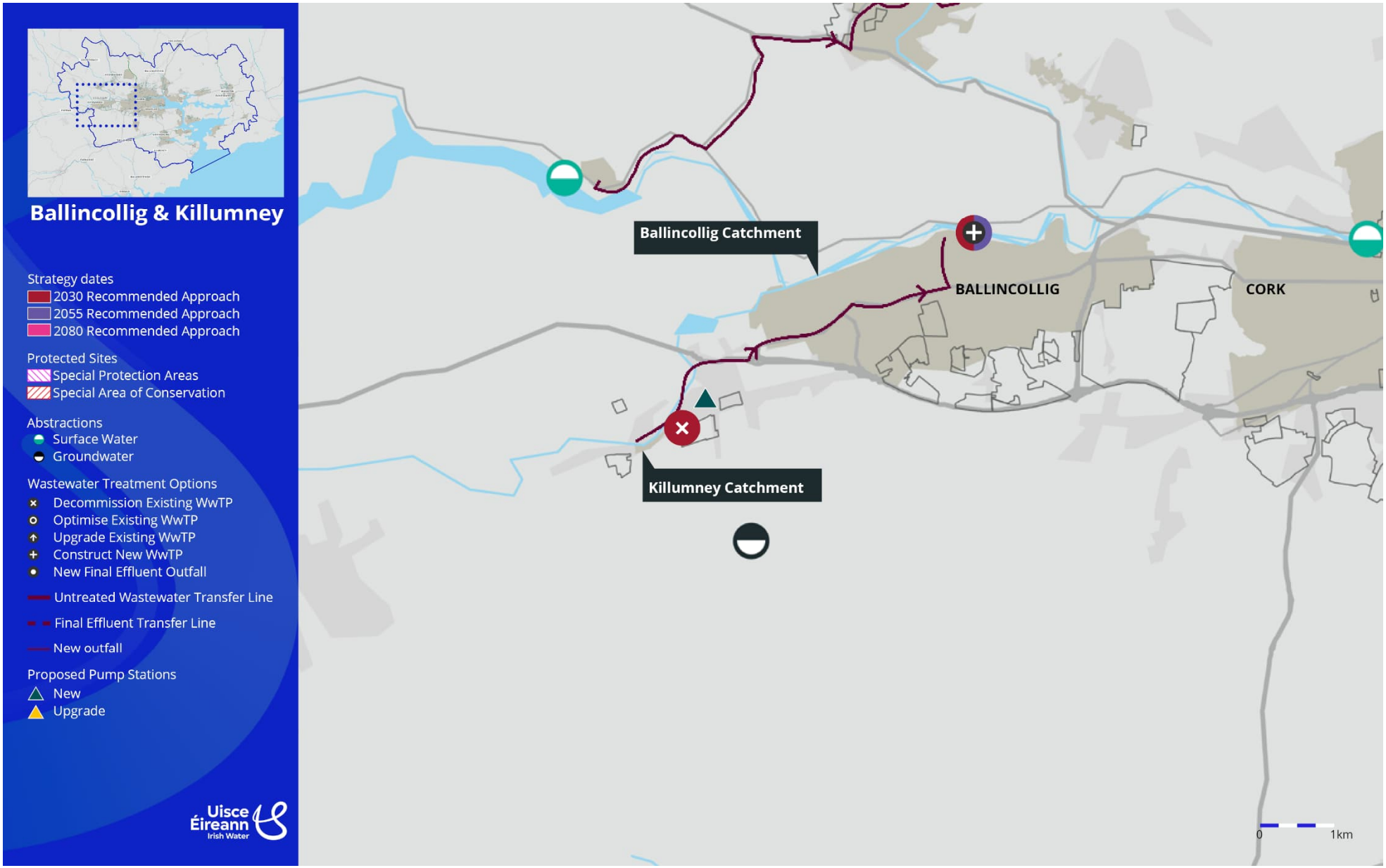

Figure 3-9: Recommended Approach for Sub-catchment 7: Ballincollig and Killumney

3.4.8 Sub-catchment 8: Cork Lower Harbour (Carrigaline, Cobh, Passage West)

Cork Lower Harbour WwTP as is located approximately 12km southeast of Cork city centre; it was commissioned in 2017. The WwTP has a design capacity of 65,000PE. The catchment includes the Ringaskiddy, Crosshaven, and Carrigaline agglomerations, mostly comprising of domestic wastewater, consisting of residential and commercial flows, as well as part of the non-domestic and/or industrial flow. The treated effluent discharges to Lower Cork Harbour, 2.6km from the shore near 'Dog Nose' bank (see Figure 3-10).

The Recommended Approach for Cork Lower Harbour is to upgrade the capacity of the WwTP by an additional 5,000PE to accommodate additional flows from the catchment as well as accepting transferred flows from Ballygarvan and Minane Bridge (sub-catchment 6) by 2023. A further upgrade of 15,000PE in the 2055 strategy horizon to cope with the load projections from North Cobh, Ballygarvan and Minane Bridge (sub-catchment 7 and 10). As population growth further increases into the 2080 strategy horizon, a further 13,000PE upgrade is proposed for Cork Lower Harbour. In the 2080 strategy horizon, the existing assets at Cork Lower Harbour WwTP will have reached the end of their design life, therefore a capital replacement of 65,000PE will be required.

The MCA determined that a new treatment process/plant upgrade on the existing site is preferable to a greenfield site driven by lower complexity, easier to implement and reduced delivery risk. Furthermore, this option also benefits from reduced carbon footprint and improved circular economy as well as reduced costs.

This option must also consider the interactions between this catchment and others within the CMA. A large proportion of sites included within MCA propose the installation of an untreated wastewater transfer pipeline with Cork Lower Harbour as the destination WwTP for further treatment. Cork Lower Harbour has been selected due to its current size and less stringent treatment requirements. As the loads from any existing WwTPs are potentially diverted to Cork Lower Harbour, in alignment with the Draft CWS, the capacity upgrades at Cork Lower Harbour WwTP will be carefully planned and executed.

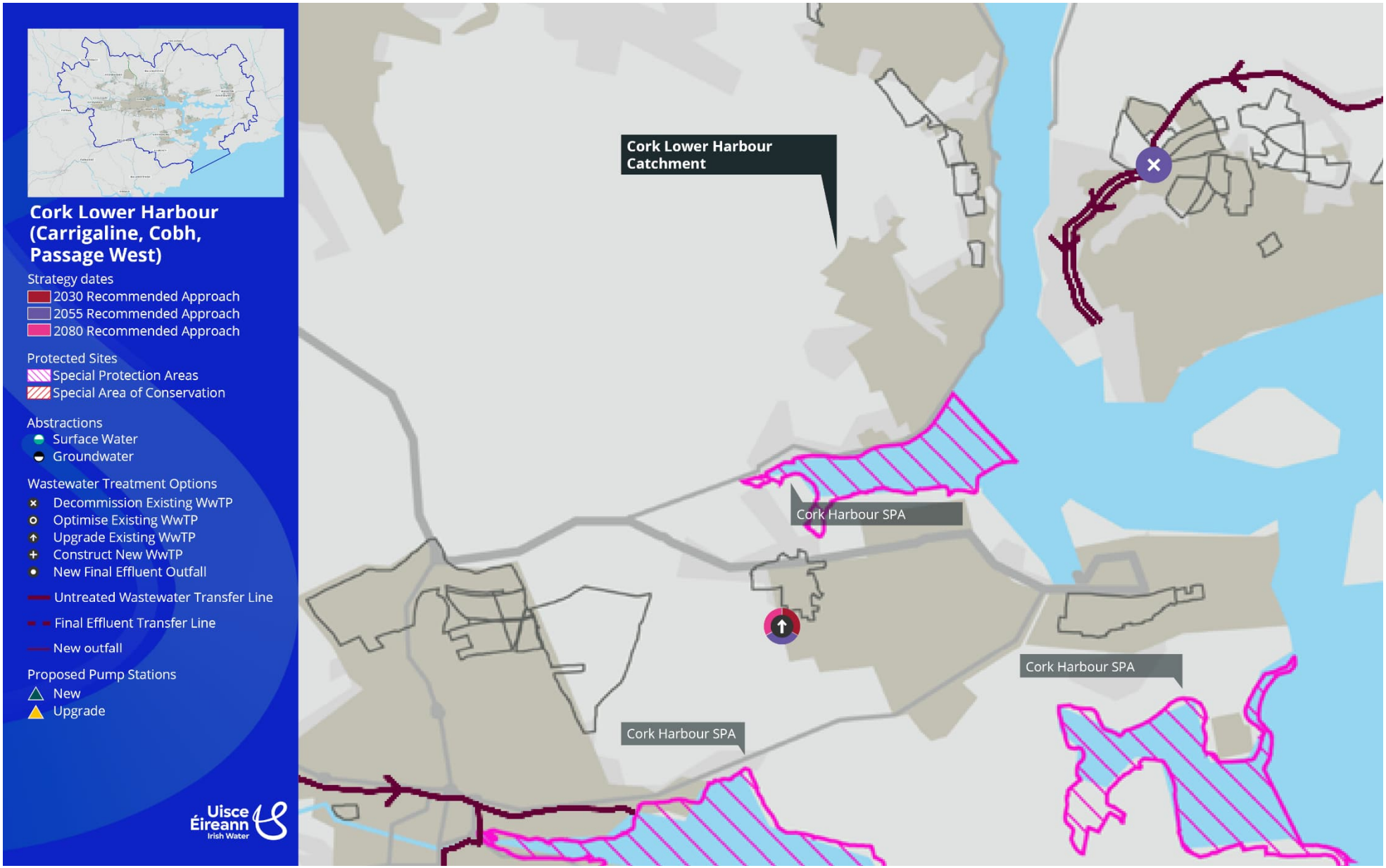

Figure 3-10: Recommended Approach for Sub-catchment 8: Cork Lower Harbour

3.4.9 Sub-catchment 9: Carrigtwohill and Midleton

In the 2080 strategy horizon, both plants will have been replaced and/or upgraded (see Figure 3-11). The transfer of untreated wastewater from Midleton to Carrigtwohill will have increased and a new discharge point for Carrigtwohill will have been constructed, further down the Slatty Water [also known as Lough Mahon] from the current location.

Carrigtwohill

Carrigtwohill WwTP is located at Tullagreen to the south of Carrigtwohill, County Cork. The WwTP was commissioned in 2016 and had replaced an overloaded oxidation ditch process. The WwTP has a design capacity of 30,000PE. The plant treats mainly industrial loads with little domestic loads. Treated effluent is discharged via a 1.28km long outfall pipe into the Slatty Waters Estuary. This waterbody forms part of the Great Island Channel SAC and Cork Harbour SPA. The existing Carrigtwohill WwTP is also within the designated area (terrestrial habitat) of both the Great Island Channel SAC and the Cork Harbour SPA.

There is an ongoing Uisce Éireann project intended to transfer loads from Midelton to Carrigtwohill WwTP.

In the 2030 strategy horizon, the plant will be optimised to ensure the WwTP is compliant. In the 2055 strategy horizon, the plant will be upgraded by an additional 15,000PE. The increased treatment capacity at the WwTP will necessitate an extension of the existing outfall which will be extended downstream down the Slatty Water by approximately 3.5km to a new discharge point. In the 2080 strategy horizon, the plant will have had a capital replacement of 30,000PE replaced and further upgraded by a further 2,000PE, and will continue to operate as a WwTP.

Midleton

Midleton WwTP is located south-west of Midleton town. The sewage plant was commissioned in 2000 and had a mechanical and electrical upgrade in 2011. The WwTP has a design capacity of 15,000PE. Treated effluent from Midleton WwTP is discharged into the North Channel Great Island at Rathcoursey which is designated as part of the Great Island Channel SAC and also the Cork Harbour SPA.

In the 2030 strategy horizon, Midleton will be upgraded by an additional 7,500PE. This shall not inhibit the operation of the existing untreated wastewater transfer from Midelton to Carrigtwohill, and 5,100PE shall be directed to Carrigtwohill for treatment. In the 2055 strategy horizon, it is proposed to increase the transfer to Carrigtwohill WwTP to 11,600PE. In the 2080 strategy horizon, there will be a WwTP capital replacement of 22,500PE and 16,500PE will be transferred to Carrigtwohill WwTP for treatment.

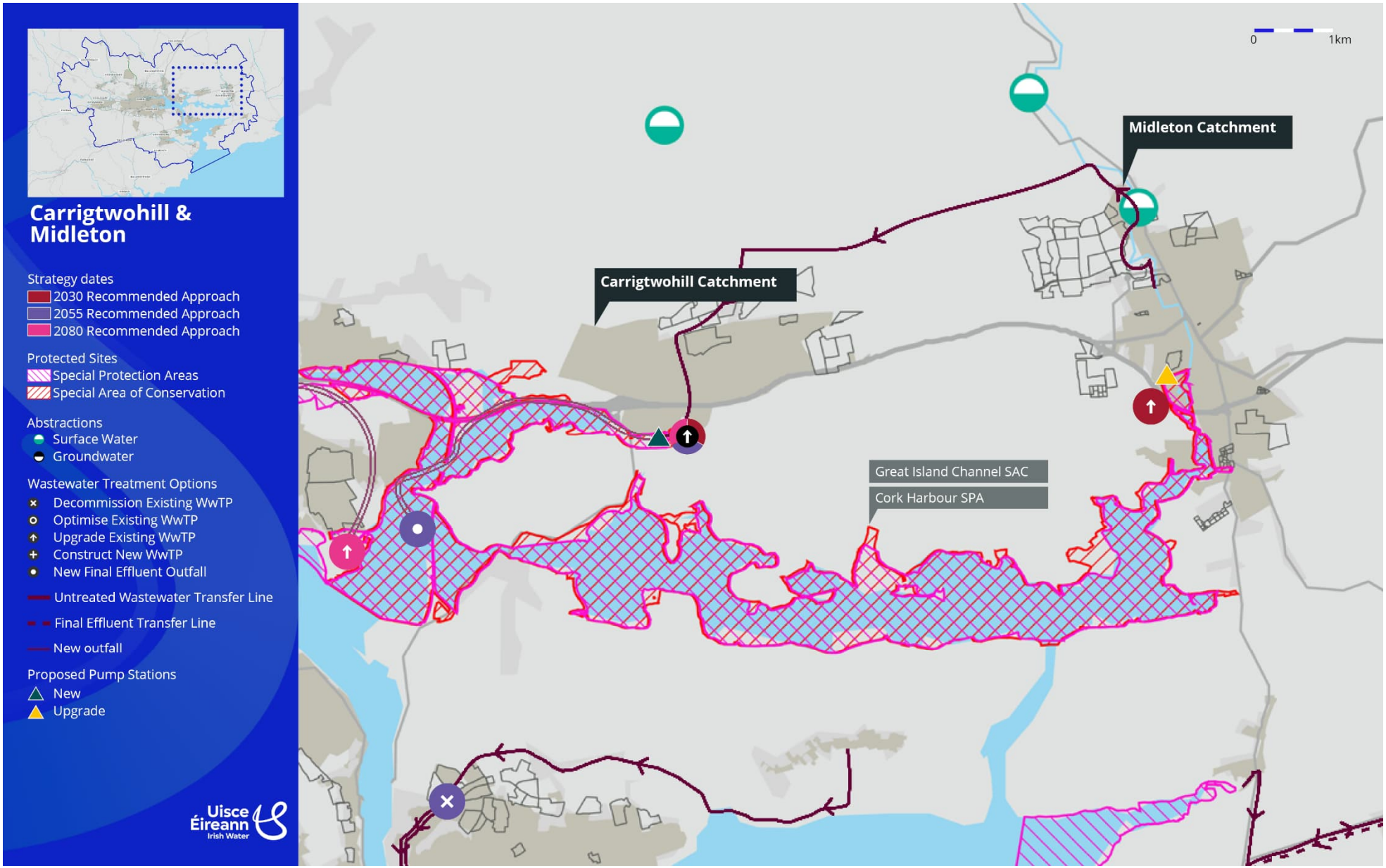

Figure 3-11: Recommended Approach for Sub-catchment 9: Carrigtwohill and Midleton.

3.4.10 Sub-catchment 10: Ballymore, Cloyne, North Cobh, Saleen and Whitegate-Aghada

In the 2030 strategy horizon, Ballymore will have a pumping station with all untreated wastewater transferred the existing Cobh network. Saleen currently has no catchment treatment and so untreated wastewater will be transferred to Cloyne via a new pipeline, the Cloyne WwTP being upgraded and replaced in the 2080 strategy horizon. A new outfall to Rostellan for the Cloyne plant will also be constructed. Whitegate-Aghada will be upgraded and replaced in the 2080 strategy horizon (see Figure 3-12).

Ballymore

The existing catchment does not have a significant wastewater network and resultingly does not have existing wastewater treatment infrastructure operated by Uisce Éireann. In the 2030 strategy horizon, a new 4.5km untreated wastewater pipeline will be constructed to the Cobh wastewater network, together with an associated pumping station. At 2055 and 2080, the plant will continue to operate as a pumping station.

Cloyne

Cloyne WwTP is located east of Cork Harbour and serves the village which is approximately 7km south of Midleton and 4km east of Cork Harbour. The WwTP has a design capacity of 1,400PE and was constructed in 1995. Stormwater overflow from the plant is discharged to the adjacent Spital Stream, while the final treated effluent is discharged to the Knocknamadderee river approximately 2.7km upstream of Cork Harbour. The existing wastewater treatment process is currently performing very poorly and is failing to achieve the discharge requirements specified within its WWDL.

Cloyne will be upgraded by an additional 3,600PE in the 2030 strategy horizon due to population increase and additional flows being received from Saleen. It is also required to construct a new final effluent outfall to Rostellan due to stringent ELVs at the existing discharge location. It will continue to operate as this at 2055. In the 2080 strategy horizon the WwTP will have a capital replacement of 5,000PE and a further 500PE upgrade.

Saleen

Saleen WwTP is located within Saleen Village and is currently served by a small septic tank which has become overloaded as the population of Saleen has increased; the plant was built in the 1950s and has a design capacity of 40PE. All treated effluent from the WwTP drains by gravity to the Cork Harbour, located adjacent to the plant. Although the plant is achieving the discharge requirements specified within its WWDL, the existing wastewater treatment process is currently performing very poorly.

In the 2030 strategy horizon, Saleen will be decommissioned and a new 4.5km untreated wastewater pipeline will be constructed to Cloyne WwTP, with an associated pumping station. At 2055 and 2080, the plant will continue to operate as a pumping station.

Whitegate-Aghada

The town of Whitegate & Aghada is located in east County Cork. The area consists of four settlements: Whitegate, Upper Aghada, Lower Aghada and Rostellan, which are located along the east coast of Cork Harbour. The Whitegate-Aghada wastewater collection network is a partially combined system, handling domestic foul sewage, commercial effluent, and road surface water drainage.

The WwTP has recently been constructed; it has a design capacity of 2,500PE. All treated effluent from the WwTP drains by gravity to White Bay, located adjacent to the plant.

In the 2030 strategy horizon, the Whitegate-Aghada WwTP will be upgraded by 1,500PE. At 2055, it will continue to operate as a WwTP but in the 2080 strategy horizon it will have had a capital replacement of 4,000PE with a further 500PE upgrade.

The outfall to be used at Rostellan for the treated wastewater from Cloyne WwTP will utilise an existing outfall which is currently in use by the Whitegate-Aghada plant but which will become available as that plant is

upgraded. The outfall lies outside any designated site area, although a tie-in to it from the Cloyne WwTP will be required.

North Cobh

It is proposed to continue operation of North Cobh WwTP through 2030. In the 2055 strategy horizon the WwTP shall be decommissioned with incoming flows being pumped to the existing Cobh wastewater network for treatment at Cork Lower Harbour WwTP. This necessitates the construction of a new pumping station which will continue to operate through to 2080.

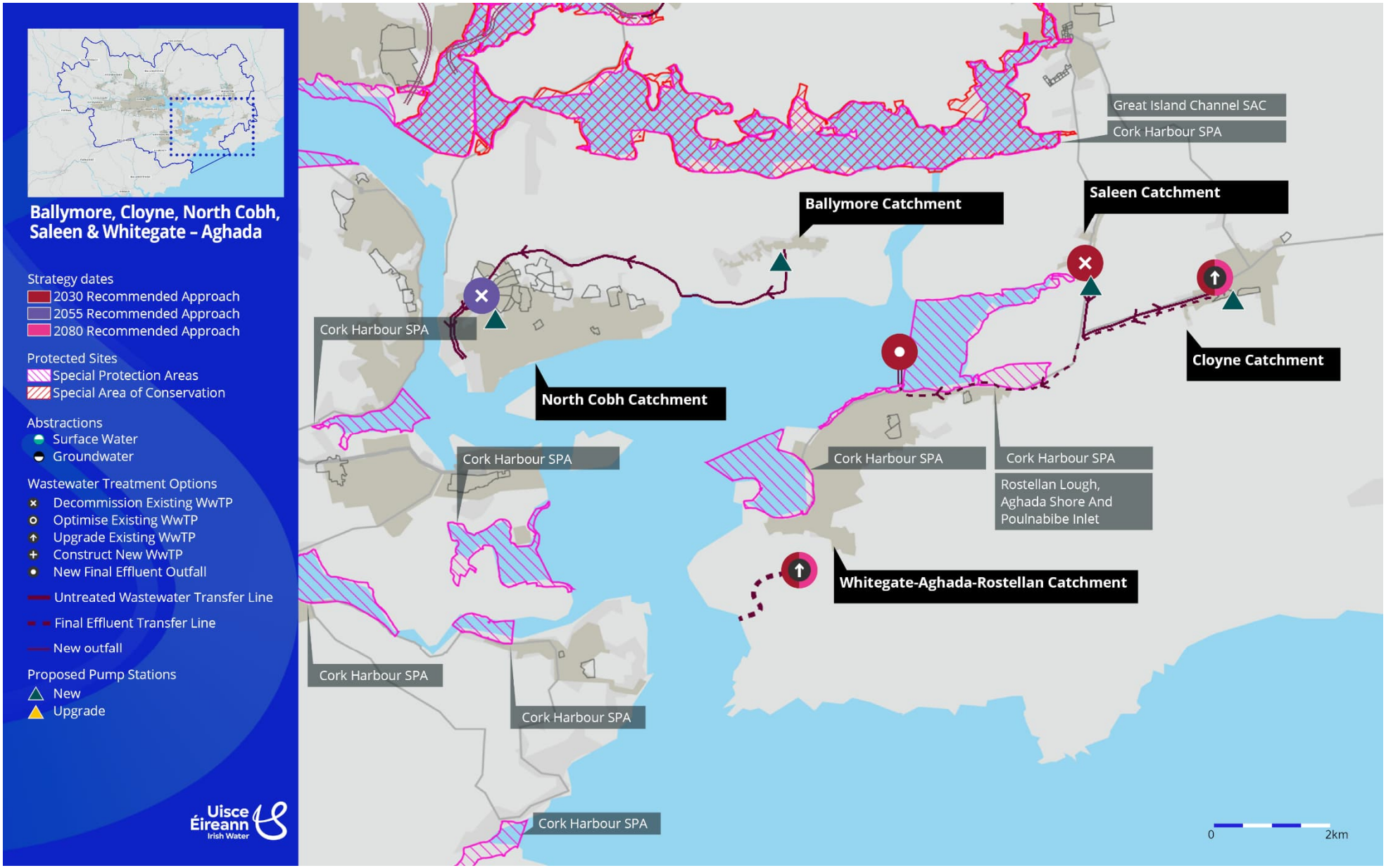

Figure 3-12: Recommended Approach for Sub-catchment 10: Ballymore, Cloyne, Saleen and Whitegate-Aghada.

3.4.11 Sub-catchment 11: Ballincurrig, Lisgoold South and Leamlara

In the 2080 strategy horizon, all untreated wastewater will be transferred to Lisgoold South WwTP (see Figure 3-13). This includes wastewater from Leamlara, which currently has no significant wastewater network and no existing wastewater treatment infrastructure, and Lisgoold North, which will be decommissioned.

Ballincurrig

Ballincurrig WwTP is located approximately 19km northeast of Cork City, 1.5km northwest of Lisgoold North WwTP and was built in the 1950s. Ballincurrig is a septic tank, with a design PE of 150, that discharges to ground (Ballinhassig East Ground Waterbody) through the percolation area and is currently overloaded. There is insufficient capacity at Ballincurrig WwTP and the process units are considered insufficient for reuse.

There is an ongoing project to transfer untreated wastewater from Ballincurrig to Lisgoold South WwTP for treatment for the 2030 horizon. A section of new sewer laid along public road is proposed for the new pumping station located near Ballincurrig Bridge where flows will be pumped from Ballincurrig to Lisgoold South. Upon completion, untreated wastewater will continually be transferred to Lisgoold South through to 2080.

Lisgoold South

Lisgoold South WwTP is located approximately 10m from the bank of the Owenacurra River Valley, it serves the southern half of the village of Lisgoold and is located approximately 550m south of Lisgoold North WwTP. The sewage plant was commissioned in 2008 and has a design capacity of 500PE but this design capacity is potentially closer to 125PE. Untreated effluent from Lisgoold South WwTP is discharged into Owenacurra River.

Lisgoold South WwTP will require to be upgraded by an additional 1,700PE in the 2030 strategy horizon with a capital replacement of 2,200PE in the 2080 strategy horizon and a further 200PE upgrade.

Lisgoold North

Lisgoold North WwTP is located in the northern half of the village of Lisgoold and is approximately 550m north of Lisgoold South WwTP. The WwTP is located at the edge of an embankment, behind a housing estate in the Owenacurra River valley area. This 80PE secondary treatment plant comprises an inlet works, aeration tank, with duty/standby blowers, clarifier section and percolation area discharging to ground.

There is an ongoing project involving the decommissioning of Lisgoold North WwTP and diverting flows to Lisgoold South WwTP for treatment via a gravity sewer. As this project is currently advancing it forms part of the approach to the CWS. Untreated wastewater will continually be transferred to Lisgoold South through to 2080.

Leamlara

Leamlara is a small existing agglomeration with a population of 476. The agglomeration is expected to grow modestly over the strategy horizons with population expected to increase to 514 in the 2030 strategy horizon, 617 in the 2055 strategy horizon and 687 in the 2080 strategy horizon. The existing catchment does not have a significant wastewater network and resultingly does not have existing wastewater treatment infrastructure operated by Uisce Éireann. In the 2030 strategy horizon, a new pipeline to transfer untreated wastewater to Lisgoold South will be constructed. A pumping station will be constructed to facilitate this. This will continue to operate up to 2080.

There is currently an ongoing project to decommission Ballincurrig and Lisgoold North WwTPs. Untreated wastewater will be transferred by a new pipeline to a new Lisgoold South WwTP. In addition, the capacity at

Lisgoold South will be increased. The various plants will continue to operate as treatment plants and pumping stations.

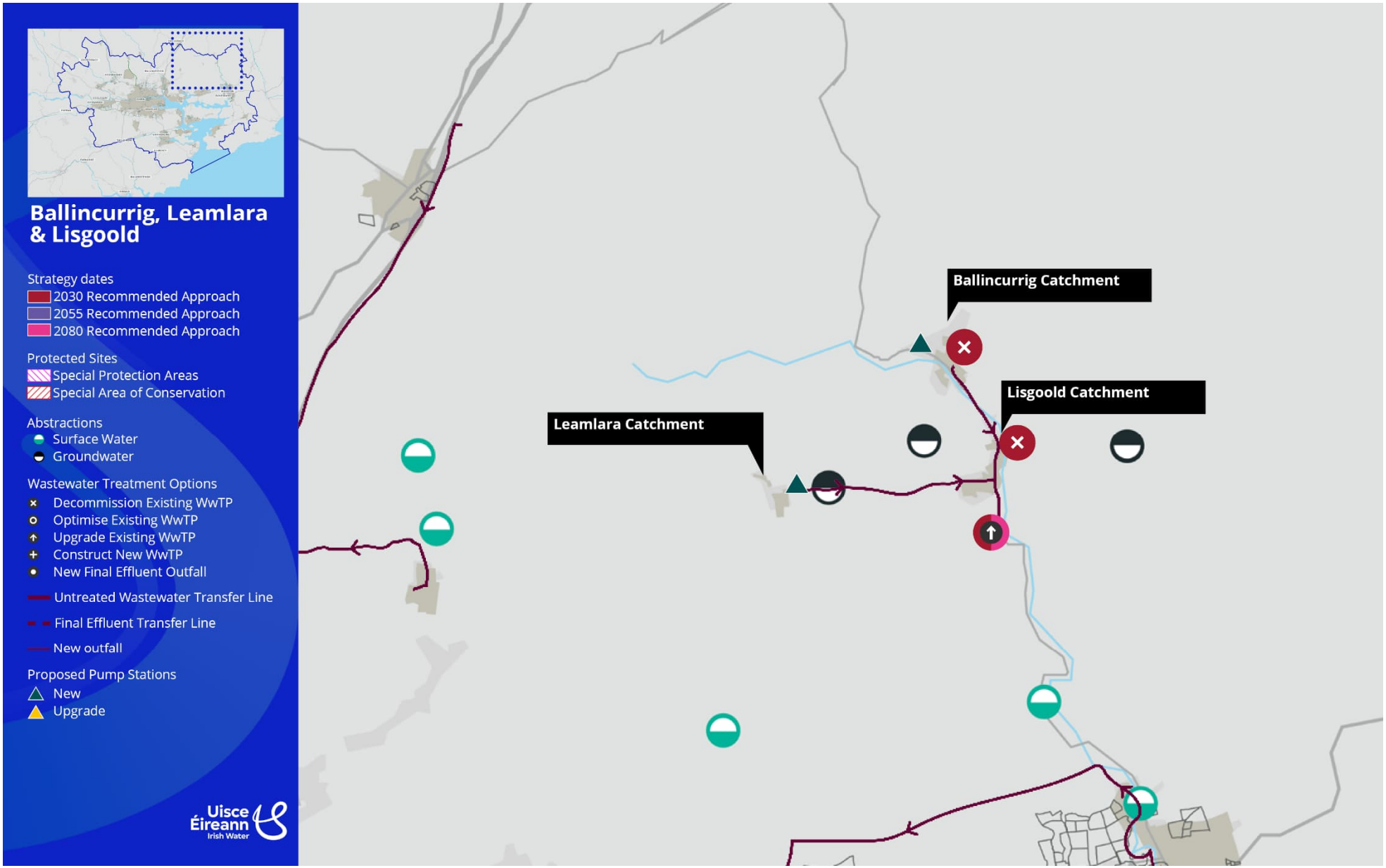

Figure 3-13: Recommended Approach for Sub-catchment 11: Ballincurrig, Lisgoold North, Lisgoold South and Leamlara

4 European Sites

4.1 Introduction and Re-Screening

The Natura 2000 network of sites in the Republic of Ireland comprises 441 SACs and 167 SPAs. The Screening for Appropriate Assessment report considered all European sites within the CMA and any sites with potential effects pathways, as they were understood at that time, located outside the CMA. This screening identified 11 European sites with potential for effects. These comprised three SACs and eight SPAs, and only two of these sites are located within the CMA.

The Screening for Appropriate Assessment report did not identify transboundary effects as a potential concern at that time but, as indicated in Section 2.6.5 above, that element has been evaluated as a result of re-screening during as the Draft CWS developed. The 11 European sites identified in the screening report were:

- Great Island Channel SAC (001058)
- Ballymacoda (Clonpriest and Pillmore) SAC (000077)
- The Gearagh SAC (000108)
- Cork Harbour SPA (004030)
- Ballycotton Bay SPA (004022)
- Sovereign Islands SPA (004124)
- Ballymacoda Bay SPA (004023)
- Blackwater Estuary SPA (004028)
- Blackwater Callows SPA (004094)
- Courtmacsherry Bay SPA (004219)
- The Gearagh SPA (004109)

Re-screening confirmed that these sites should be considered in this NIS-AA. One European site was identified during the re-screening for inclusion. This was:

- Blackwater River (Cork/Waterford) SAC (002170)

European sites within and surrounding the Draft CWS boundary are shown in Figure 4-1 below.

Figure 4-1: European sites within and surrounding the CMA

4.2 Special Areas of Conservation

SACs cover 58 habitat types recognised in Annex I of the Habitats Directive, with 16 habitats designated as "priority" habitats owing to their ecological vulnerability (NPWS, 2019a). Habitats for which SACs are designated include lakes, raised bogs, blanket bogs, turloughs, sand dunes, machair, heaths, rivers, woodlands, estuaries and sea inlets. In addition, the Habitats Directive recognises 26 Annex II species. Some of the species for which SACs have been designated include but are not limited to: Atlantic salmon (*Salmo salar*), otter (*Lutra lutra*), lesser horseshoe bat (*Rhinolophus hipposideros*), freshwater pearl mussel (*Margaritifera margaritifera*) and Killarney fern (*Trichomanes speciosum*). There are 441 SACs in Ireland and of these 358 are water-dependent (Department of Housing, Planning and Local Government, 2018c). These SACs support various habitats and species that are dependent on various water sources. There are approximately 800 water bodies within European sites, all supporting water dependent habitats and species. A number of significant pressures on these water bodies have been identified (Department of Housing, Planning and Local Government, 2018c), including:

- Agriculture;
- Hydromorphological pressures;
- Forestry;
- Urban wastewater;
- Anthropogenic pressures;
- Abstractions; and
- Invasive species.

Of the pressures noted above, urban wastewater is of particular relevance to the Draft CWS. Drainage/wastewater has been identified as being a potential threat to some Annex I habitats and Annex II species.

There is only one SAC within the Draft CWS core study area, which is the Great Island Channel SAC (see below). In addition, three non-marine SACs are hydrologically linked to the study area and are considered in the ZoI of the Draft CWS:

- Blackwater River (Cork/Waterford) SAC;
- Ballymacoda (Clonpriest and Pillmore) SAC; and
- The Gearagh SAC.

The Blackwater River (Cork/Waterford) SAC (002170) is hydrologically connected to the CMA study area as the Watergrasshill WwTP discharges into the Flesk (Bride) watercourse which is a tributary of the Blackwater River. Furthermore, the WFD condition status (2016-2021) of the reach of the Flesk (Bride) at the Watergrasshill WwTP is 'Poor' (EPA, 2025).

A summary of the SACs which are within the ZoI of the Draft CWS is also provided in Appendix B.

Great Island Channel SAC

The Great Island Channel stretches from Little Island to Midleton, with its southern boundary being formed by Great Island. It is an integral part of Cork Harbour which contains several other sites of conservation interest (NPWS, 2013). The Annex I habitats within the study area designated within the Great Island Channel SAC are mudflats and sandflats not covered by seawater at low tide [1140], and Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]. These are found within the North Channel Great Island, Lough Mahon and Lough Mahon (Harper's Island) transitional waterbodies. There are no Annex II species designated as QIs within the Great Island Channel SAC.

The main habitats of the SAC are the sheltered tidal sand and mudflats. Owing to the sheltered conditions, the intertidal flats are composed mainly of soft muds which support a range of macro-invertebrates. Green algal species occur on the flats whilst cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially at Rossleague and Belvelly (NPWS, 2013). The saltmarshes are scattered through the site and are all of the estuarine type on mud substrate. The greatest threats to its conservation significance come from road works, infilling, sewage outflows and possible marina developments (NPWS, 2013). Saltmarsh habitats in the Great Island Channel SAC at two locations (Bawnard and Carrigtwohill) have been indicated to be potentially at risk from common cord-grass (*Spartina anglica*)[9] (NPWS, 2014a). The species was planted in Cork Harbour at Inchera House, Little Island in 1925 (reference in McCorry and Ryle, 2009).

Blackwater River (Cork/Waterford) SAC

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. The peaty nature of the terrain in the upper reaches and of some of the tributaries gives the water a pronounced dark colour. The site consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which include the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun (NPWS, 2016a).

Wet woodlands are found where river embankments have broken down and channel edges are subject to daily inundation. This is particularly evident in the steep-sided valley of the River Bride, between Cappoquin and Youghal. Marshes and reedbeds cover most of the flat areas beside the rivers and often occur in mosaic with the wet woodland. Floating river vegetation is found along much of the freshwater stretches within the

[9] Common cord-grass is accepted to have arisen about 1890 as a fertile hybrid between a native and non-native species (Leach and Pearman, 2025).

site. The Blackwater Valley has a number of dry woodlands; these have mostly been managed by the estates in which they occur, frequently with the introduction of beech and a few conifers, and sometimes of the invasive species rhododendron (*Rhododendron ponticum*) and cherry laurel (*Prunus laurocerasus*).

The estuary and the habitats within and associated with it form a large component of the site. Very extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. The area of saltmarsh within the site is small.

The site is also important for the presence of several E.U. Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), brook lamprey (*Lampetra planeri*), river lamprey (*L. fluviatilis*), twaite shad (*Alosa fallax fallax*), freshwater pearl mussel (*Margaritifera margaritifera*), otter (*Lutra lutra*) and Atlantic salmon (*Salmo salar*). The Awbeg supports a population of white-clawed crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, over-grazing within the woodland areas, and invasion by non-native species (NPWS, 2016a). The list of invasive species includes Himalayan balsam (*Impatiens glandulifera*) (NPWS, 2012a).

The site holds important numbers of wintering waterfowl via the Blackwater Callows SPA and the Blackwater Estuary SPA.

Ballymacoda (Clonpriest and Pillmore) SAC

This is a coastal site stretches north-east from Ballymacoda to within about 6km of Youghal, Co. Cork. Though moderate in size, it has a good diversity of coastal habitats, including several listed on Annex I of the E.U. Habitats Directive (NPWS, 2015a). The site is selected for its marine and intertidal habitats and it comprises the estuary of the Womanagh River, a substantial river which drains a large agricultural catchment. Intertidal mudflats and sandflats, which form part of the overall estuarine habitat, are well represented. The main channel is flanked by saltmarshes and wet fields, much of the latter being improved for agriculture. The saltmarshes are mainly classified as Atlantic salt meadows and there is a large area of Mediterranean salt meadows found on the island at Clonpriest East. Part of the site is also an SPA (Ballymacoda Bay SPA).

The Gearagh SAC

This site is located on the River Lee in Co. Cork, extending westwards and southwards from the Lee Bridge, which is about 1.5km south of Macroom. It extends for about 7km of river, to Dromcarra Bridge. The Gearagh occupies a wide, flat valley of the River Lee, on a bed of limestone overlain with sand and gravel. The adjacent valley walls are of Old Red Sandstone. The site is designated for its vegetation, including woodlands and floating river vegetation, and for otter (NPWS, 2015b).

This unusual area has formed where the River Lee breaks into a complex network of channels (2 to 6m wide) weaving through a series of wooded islands. In 1954/55, in the eastern part of the Gearagh, extensive tree felling and flooding were carried out to facilitate the operation of a hydro-electric scheme. Today, the reservoir covers the area from Lee Bridge to Annahala Bridge, and westwards of Illaunmore Island.

Otter is frequent throughout the site.

The site is also designated for its wintering bird population (The Gearagh SPA).

4.3 Special Protection Areas

SPAs are designated for the conservation of Special Conservation Interest (SCI)[10] Annex I birds and other regularly occurring migratory birds and their habitats. There are 167 SPAs in the Republic of Ireland. The majority of the wintering water birds and breeding seabirds occurring in Ireland are considered to be regularly occurring migratory birds. Over 60% of the 25 Annex I listed species that now occur in the Republic of Ireland on a regular basis belong to the breeding seabird and wintering waterbird groups. This has in part led to the situation of the majority (> 80%) of Ireland's SPAs being designated for these two bird groups.

Some of the productive marine intertidal zones of bays and estuaries are included within SPAs and these provide vital food resources for several wintering wader species, including knot (*Calidris canutus*), dunlin (*Calidris alpina*) and bar-tailed godwit (*Limosa lapponica*). Also included in the SPA network are marine waters adjacent to breeding seabird colonies and other important areas for divers, seaducks and grebes.

Finally, a number of inland wetland sites and areas of blanket bog and upland habitats have also been designated as SPAs for wintering water birds. These sites provide important breeding and foraging areas for numerous other species including merlin (*Falco columbarius*) and golden plover (*Pluvialis apricaria*). Agricultural land is also represented within the SPA network ranging from the extensive farmland of upland areas where hedgerows, wet grassland and scrub offer feeding and/or breeding opportunities for hen harrier (*Circus cyaneus*) to the intensively farmed coastal polderland where internationally important numbers of swans and geese occur.

A summary of the SPAs which are within the ZoI of the Draft CWS is provided in Appendix B.

Cork Harbour SPA

There is one SPA within the Draft CWS core study area; this is the Cork Harbour SPA. There are 25 QI bird species (and wetlands and waterbirds [A999]) designated within this SPA. Cork Harbour is a large, sheltered bay system, which stretches from the two main estuaries of the River Lee, near Cork City in the northwest, and the Owenacurra River, near Midleton, in the northeast, southwards as far as Roches Point (NPWS, 2014a). It is a complex site and encompasses many other estuaries and inlets including the area of Slatty Water and Rostellan.

The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poulnabibe inlets (NPWS, 2015c).

Owing to the sheltered conditions, the intertidal flats are often muddy in character and support a range of macro-invertebrates. Green algae are a common occurrence on the mudflats while common cord-grass has colonised the intertidal flats in places, and is particularly prevalent at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for waterbirds (NPWS, 2015d).

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top ten sites in the country. Of particular note is that the site supports internationally important populations of black-tailed godwit (*Limosa limosa*) and redshank (*Tringa totanus*). The QI bird species designated within this SPA are included in Table 4-1. The SPAs that the study area is hydrologically linked to and are considered within the ZoI of the Draft CWS are Ballycotton Bay SPA, Sovereign Islands SPA, Ballymacoda Bay SPA, Blackwater Estuary SPA, Blackwater Callows SPA and The Gearagh SPA. Qualifying interests of these linked sites which are also qualifying interests of Cork Harbour SPA are also indicated in Table 4-1.

[10] The terms Special Conservation Interest (SCI) and Qualifying Interest (QI) have been used interchangeably throughout the document when referring to Annex I bird species for which an SPA has been designated.

Table 4-1: QI bird species designated within Cork Harbour SPA

Common name	Scientific name	European code	SPAs of which the species is also a QI
Little grebe	*Tachybaptus ruficollis*	A004	-
Great crested grebe	*Podiceps cristatus*	A005	-
Cormorant	*Phalacrocorax carbo*	A017	Sovereign Islands
Grey heron	*Ardea cinerea*	A028	-
Shelduck	*Tadorna tadorna*	A048	Courtmacsherry Bay
Wigeon	*Mareca penelope*	A050	Ballymacoda Bay, Blackwater Estuary, Blackwater Callows, Courtmacsherry Bay, The Gearagh
Teal	*Anas crecca*	A052	Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, The Gearagh
Mallard	*Anas platyrhynchos*	A053	The Gearagh
Pintail	*Anas acuta*	A054	-
Shoveler	*Spatula clypeata*	A056	-
Red-breasted merganser	*Mergus serrator*	A069	Courtmacsherry Bay
Oystercatcher	*Haematopus ostralegus*	A130	-
Golden plover	*Pluvialis apricaria*	A140	Ballycotton Bay, Ballymacoda Bay, Blackwater Estuary, Courtmacsherry Bay
Grey plover	*Pluvialis squatarola*	A141	Ballycotton Bay, Ballymacoda Bay
Lapwing	*Vanellus vanellus*	A142	Ballycotton Bay, Ballymacoda Bay, Blackwater Estuary, Courtmacsherry Bay
Dunlin	*Calidris alpina*	A149	Ballymacoda Bay, Blackwater Estuary, Courtmacsherry Bay,
Black-tailed godwit	*Limosa limosa*	A156	Ballycotton Bay, Ballymacoda Bay, Blackwater Estuary, Courtmacsherry Bay
Bar-tailed godwit	*Limosa lapponica*	A157	Ballycotton Bay, Ballymacoda Bay, Blackwater Estuary, Blackwater Callows, Courtmacsherry Bay
Curlew	*Numenius arquata*	A160	Ballycotton Bay, Ballymacoda Bay, Blackwater Estuary, Courtmacsherry Bay
Redshank	*Tringa totanus*	A162	Ballymacoda Bay, Blackwater Estuary
Greenshank	*Tringa nebularia*	A164	-
Black-headed gull	*Chroicocephalus ridibundus*	A179	Ballymacoda Bay, Courtmacsherry Bay

Common name	Scientific name	European code	SPAs of which the species is also a QI
Common gull	*Larus canus*	A182	Ballycotton Bay, Ballymacoda Bay, Courtmacsherry Bay
Lesser black-backed gull	*Larus fuscus*	A183	Ballycotton Bay, Ballymacoda Bay
Common tern	*Sterna hirundo*	A193	-

There are six QI species of the SPAs with which the Draft CWS area is linked to which are not QI species of the Cork Harbour SPA. These are listed below in Table 4-2. The habitats of Cork Harbour, such as saltmarshes and mudflats as well as the open water, may act as supporting habitat for these species for activities such as foraging and roosting.

Table 4-2: QI bird species of European sites potentially linked with the Cork Harbour area

Common name	Scientific name	European code	SPAs of which the species is a QI
Great Northern Diver	*Gavia immer*	A003	Courtmacsherry Bay
Whooper Swan	*Cygnus cygnus*	A038	Blackwater Callows
Coot	*Fulica atra*	A125	The Gearagh
Ringed Plover	*Charadrius hiaticula*	A137	Ballycotton Bay, Ballymacoda Bay
Sanderling	*Calidris alba*	A144	Ballymacoda Bay
Turnstone	*Arenaria interpres*	A169	Ballycotton Bay

The overarching Conservation Objective for Cork Harbour SPA is to ensure that waterbird populations and their wetland habitats are maintained at, or restored to, favourable conservation condition. This includes, as an integral part, the need to avoid deterioration of habitats and significant disturbance; thereby ensuring the persistence of site integrity. For more information on Conservation Objectives see Section 4.4 below.

Ballycotton Bay SPA

Ballcotton Bay SPA is situated on the south coast of Co. Cork and is an east-facing coastal complex, which stretches northwards from Ballycotton to Ballynamona, a distance of c. 2km. The site comprises two sheltered inlets which receive the flows of several small rivers. The southern inlet had formerly been lagoonal (Ballycotton Lake) but breaching of the shingle barrier in recent times has resulted in the area reverting to an estuarine system (NPWS, 2015d).

The principal habitat within the site is inter-tidal sand and mudflats. These are mostly well-exposed and the sediments are predominantly firm sands. In the more sheltered conditions of the inlets, sediments contain a higher silt fraction. The inter-tidal flats provide the main feeding habitat for the wintering birds. Sandy beaches are well represented. Salt marshes fringe the flats in the sheltered inlets and these provide high tides roosts. A small area of shallow marine water is also included. The site is designated for 11 wintering bird species as well as for 'Wetland and Waterbirds'.

Ballymacoda Bay SPA

This coastal site stretches north-east from Ballymacoda to within several kilometres of Youghal, Co. Cork. It comprises the estuary of the Womanagh River, a substantial river which drains a large agricultural catchment.

Part of the tidal section of the river is included in the site and on the seaward side the boundary extends to, and includes, Bog Rock, Barrel Rocks and Black Rock. The inner part of the estuary is well sheltered by the Ring peninsula, a stabilised sand spit with sand dunes at its northern end and salt marshes on the landward side (NPWS, 2014c).

Sediment types vary from muds to muddy sands in the inner part to fine rippled sands in the outer exposed part. In the more sheltered areas the intertidal flats are colonised by mats of green algae, with brown seaweeds occurring on the rocky shores of the shingle spits. Common Cord-grass has spread within the estuary since the late 1970s. The main channel is flanked by salt marshes and wet fields, much of the latter being improved for agriculture.

The site is designated for 16 wintering bird species as well as for 'Wetland and Waterbirds'.

Blackwater Callows SPA

The Blackwater Callows SPA comprises the stretch of the River Blackwater that runs in a west to east direction between Fermoy and Lismore in Counties Cork and Waterford, a distance of almost 25km. The site includes the river channel and strips of seasonally-flooded grassland within the flood plain. Sandstone ridges, which run parallel to the river, confine the area of flooding to a relatively narrow corridor (NPWS, 2014d).

The site is designated for four wintering bird species as well as for 'Wetland and Waterbirds'.

Blackwater Estuary SPA

The Blackwater Estuary SPA is a moderately-sized, sheltered south-facing estuary, which extends from Youghal New Bridge to the Ferry Point peninsula, close to where the river enters the sea. It comprises a section of the main channel of the River Blackwater to Ballynaclash Quay. At low tide, intertidal flats are exposed on both sides of the channel. On the eastern side the intertidal channel as far as Kinsalebeg and Moord Cross Roads is included, while on the west side the site includes part of the estuary of the Tourig River as far as Kilmagner (NPWS, 2014e).

The intertidal sediments are mostly muds or sandy muds, reflecting the sheltered conditions of the estuary. Salt marshes fringe the estuarine channels, especially in the sheltered creeks.

The site is designated for eight wintering bird species as well as for 'Wetland and Waterbirds'.

Courtmacsherry Bay SPA

Courtmacsherry Bay SPA is located approximately 12km south of Bandon and immediately east of the village of Timoleague in west Co. Cork. The site, which is largely estuarine in nature, consists of the drowned valley of the Argideen River which is now filled with sediments, resulting in extensive mudflats and areas of saltmarsh. The estuary of the Kilbrittain River in the north-east of the site holds an area of well-developed saltmarsh. The seaward boundary for the site stretches from Coolmain Point to Barry Point, and includes Coolmain Bay and Broadstrand Bay (NPWS, 2010).

Most of the mudflats are unvegetated, although in places common cord-grass occurs. Saltmarsh has developed in a number of areas.

The site is designated for 12 wintering bird species as well as for 'Wetland and Waterbirds'.

Sovereign Islands SPA

The Sovereign Islands are two very small marine islands located approximately 1km off the coastline at the entrance to Oysterhaven Bay in Co. Cork. The islands are rocky stacks separated by a narrow sound of about 20m width. The eastern island is flat-topped and rises to 24m above sea level; the western one is more peaked and rises to 30m (NPWS, 2011).

The islands are important for breeding seabirds, with most occurring on the eastern stack and the side is designated for breeding cormorant. Foraging ranges from the nest site during the breeding season may be a mean of 7km, up to a maximum of 35km (NPWS, 2025). The SPA is approximately 13.5km from the mouth of Cork Harbour.

The Gearagh SPA

The Gearagh, located approximately 2km south-west of Macroom, Co. Cork, comprises a stretch of the River Lee that was dammed in the 1950s as part of a hydroelectric scheme. The river valley formerly held an extensive area of alluvial forest but only part of the forest now survives. The SPA extends from Annahala bridge westwards to Toon bridge. The principal habitat is a shallow lake or reservoir which is fringed by wet woodland, scrub and grassland that is prone to flooding. Alluvial forest occurs on islands. At times of low water, a diverse pioneer plant community develops on the mud (NPWS, 2012b).

The site is designated for four wintering bird species as well as for 'Wetland and Waterbirds'.

4.4 Conservation Objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of annexed habitats and annexed species of community interest for which an SAC or SPA has been designated. The conservation objectives (COs) for a European site are set out to ensure that the QIs/SCIs of that site are maintained or restored to a favourable conservation condition. Maintenance of favourable conservation condition of habitats and species at a site level in turn contributes to maintaining or restoring favourable conservation status of habitats and species at a national level and ultimately at the European site network level.

Detailed site synopses for each European site are available from the NPWS website[11]. Site-specific COs have been prepared for all sites within Ireland considered in this report. The site-specific COs aim to define the requirements for favourable conservation condition for habitats and species at the site level. At a genera level these COs aim to maintain and restore the favourable conservation condition of the qualifying interests:

- For SACs: *To maintain or restore the favourable conservation condition of the Annex I habitats and/or Annex II species for which the SAC has been selected*.
- For SPAs: *To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA*.

Following on from this, favourable conservation status (or condition, at a site level) of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is "favourable".

The favourable conservation status (or condition, at a site level) of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

[11] https://www.npws.ie/protected-sites (Accessed January 2024)

A full list of the COs and QIs/SCIs that each European site is designated for relating to the Draft CWS, as well as the attributes and targets to maintain or restore the QIs/SCIs to a favourable conservation condition are available from the NPWS website[12].

[12] https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives (Accessed January 2024)

5 Summary of Screening for Appropriate Assessment

5.1 Identification of potential impacts and pathways for effect

Table 5-1 outlines broad categories of potential impacts that could occur as a result of construction and or operation of the Recommended Approach for each sub-catchment, and the likely significant effects on European sites and their qualifying interest.

Table 5-1: Potential effect pathways of options arising from Draft CWS

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
Habitat loss - permanent	The provision of new infrastructure or permanent change of habitat from the plan could result in direct loss of QI habitat or supporting habitat for QI species in a European site, or functionally linked land associated with mobile QI species outside the boundaries of European sites.	• The ZoI assessed is within the footprint of the plan. • Physical loss of habitat is only possible within the boundary of a European site, or within an area of functionally linked land habitat outside of the European site.	• QI habitats are sensitive within the boundary of their designated site. • Supporting habitats of QI species are sensitive within the boundary of their designated site. • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site.
Habitat loss - temporary	Construction activities including temporary works areas and access routes of the plan could result in the temporary loss of habitats before reinstatement after construction is completed, potentially affecting QI habitat or supporting habitat for QI species in a European site, or functionally linked land associated with mobile QI species outside the boundaries of European sites.	• The ZoI assessed is within the footprint of the plan. • Physical loss of habitat is only possible within the boundary of a European site, or within an area of functionally linked land habitat outside of the European site.	• QI habitats are sensitive within the boundary of their designated site. • Supporting habitats of QI species are sensitive within the boundary of their designated site. • Functionally linked habitats of QI species are sensitive within suitable habitat that is within the range of the QI species from their designated site.
Habitat degradation –	Construction activities and changes in operational activities	• The ZoI assessed is within the footprint of the Proposed	• QI habitats are sensitive within the boundary of their designated site.

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
changes in water quality	can release oils, chemicals, heavy metals, silt, etc from equipment as well as suspended solids, etc from waste materials. This can directly affect QI species or habitats or affect them indirectly through loss of aquatic prey species, or through changes in their habitats.	Scheme or within hydrologically linked areas (to the point where effects would be imperceptible such as where a watercourse meets open sea). • Pollutants can travel along hydrological linkages such as watercourses to a considerable distance from works.	• Supporting habitats of QI species are sensitive within the boundary of their designated site. • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site.
Habitat degradation – hydrological changes	In-stream structures or changes to water management from the plan can cause changes in hydrology, which can alter water volumes and flows, which can in turn change the wetness of habitats or cause erosion or deposition of materials. Such changes can affect QI habitats or supporting and functionally linked habitats of QI species.	• The ZoI assessed is within surface water catchments that the footprint of the plan lies within. • Surface water changes can occur within catchments as changes in one location affect other locations via watercourses for example.	• QI habitats are sensitive within the boundary of their designated site. • Supporting habitats of QI species are sensitive within the boundary of their designated site. • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site.
Habitat degradation – hydrogeological changes	Construction activities such as groundworks and excavations and permanent changes to water management can cause changes to groundwater volumes and flows, which can change the hydrogeology of QI habitats and supporting or functionally linked habitats of QI species.	• The ZoI assessed is within groundwater catchments that the footprint of the plan lies within. • Groundwater changes can occur within catchments as changes in one location affect other locations.	• QI habitats are sensitive within the boundary of their designated site. • Supporting habitats of QI species are sensitive within the boundary of their designated site. • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site.

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
Habitat degradation – changes in air quality	Construction plant and vehicles emit exhausts containing pollutants that can deposit on QI habitats, which can cause direct toxic effects on QI species and habitats or degradation of QI habitat.	• The ZoI assessed is within 200m of the footprint of the plan. • Pollutant deposition from vehicles is thought to occur in insignificant amounts beyond 200m from the source.	• QI habitats are sensitive within the boundary of their designated site. • Supporting habitats of QI species are sensitive within the boundary of their designated site. • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site.
Habitat degradation – spread of alien invasive species	Construction activities can cause the spread of invasive species already within the construction site (through transfer on plant or within materials moved during earthworks), or by importing materials from outside the construction site (on the wheels of plant or delivery vehicles, etc). This can cause the degradation of QI habitats or supporting and functionally linked habitats of QI species.	• The ZoI assessed is within the footprint of the Preferred Approach. • The spread or importing of invasive species can only occur within the construction site.	• QI habitats are sensitive within the boundary of their designated site. • Supporting habitats of QI species are sensitive within the boundary of their designated site. • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site.
Disturbance of species	Construction activities could result in disturbance of QI species through changes in noise, vibration, movement (of people and/or vehicles) and lighting. Disturbance may lead to the abandonment of breeding, foraging or resting sites by QI	• The ZoI assessed is within the footprint of the Preferred Approach or within 300m of the construction or operation of the Approach. • 300m is considered to be an appropriate distance to assess disturbance as QI species are unlikely	• QI species are sensitive within the boundary of their designated site (in supporting habitat) or within functionally linked habitats where suitable habitat is present within the range of the QI species from their designated site.

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
	species, potentially resulting in increased energy expenditure, reduced fitness and inability to complete lifecycle stages.	to be significantly disturbed beyond this distance.	
Mortality	Mortality of individuals of QI species could occur directly through killing of individuals by construction works or indirectly as a result of pollution entering the watercourse.	• The ZoI assessed is within the footprint of the Proposed Scheme, within 50m of watercourse crossings that will be subject to works. • Direct mortality from construction activities can only occur within the construction footprint. Indirect mortality can occur near to works at watercourses that sever species commuting routes.	• QI species are sensitive within the boundary of their designated site (in supporting habitat) or within functionally linked habitats where suitable habitat is present within the range of the QI species from their designated site.

5.2 Assessment of Likely Significant Effects

The AA screening report for the Draft CWS is provided in Appendix A and, as previously indicated, re-screening has taken place. The Draft CWS has applied the methodology developed in the Draft CWS to identify suitable drainage management options for the various sub-catchments.

The Recommended Approach is outlined in Section 3.4 and has been considered for its potential for LSE as part of this NIS for the Draft CWS. The Recommended Approach with identified potential LSEs that could lead to adverse effects on site integrity (AESI) are assessed for the purposes of AA in Section 6 of this report. Where elements of the Recommended Approach was determined not to give rise to potential LSEs, no further assessment for the purposes of AA was carried out.

The 'source-pathway-receptor' model was applied taking consideration of all potential impact pathways connecting elements of the Draft CWS to European sites in view of their Conservation Objectives. This approach also took into account other analyses carried out as part of the development of the Draft CWS including the modelling of current and future assimilative capacity of the relevant freshwater and marine waterbodies.

The Draft CWS was examined in the Screening for AA report with reference to its location to European sites, and taking account of the potential effects outlined in Table 5.1; the European sites which are considered to be within the ZoI of the Draft CWS and taken forward for further assessment are listed in Table 5-2.

Table 5-2: List of European Sites to be considered within the AA indicating stage at which the site was screened in (AASR or NIS-AA) and the identified effects pathways

Site	Screening Stage	Effects Pathway
Great Island Channel SAC (001058)	AASR	• Habitat loss – permanent • Habitat loss – temporary • Habitat degradation – changes in water quality • Habitat degradation – hydrological changes • Habitat degradation – hydrogeological changes • Habitat degradation – changes in air quality • Habitat degradation – spread of invasive species • Disturbance of species • Mortality
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	AASR	• Habitat degradation – changes in water quality • Habitat degradation – hydrological changes • Habitat degradation – hydrogeological changes
The Gearagh SAC (000108)	AASR	• Habitat degradation – hydrological changes • Habitat degradation – hydrogeological changes
Cork Harbour SPA (004030)	AASR	• Habitat loss – permanent • Habitat loss – temporary • Habitat degradation – changes in water quality • Habitat degradation – hydrological changes • Habitat degradation – hydrogeological changes • Habitat degradation – changes in air quality • Habitat degradation – spread of invasive species • Disturbance of species • Mortality
Ballycotton Bay SPA (004022)	AASR	• Habitat loss – permanent (functionally linked habitat) • Habitat loss – temporary (functionally linked habitat) • Habitat degradation – changes in water quality • Habitat degradation – hydrological changes • Habitat degradation – hydrogeological changes • Disturbance of species • Mortality
Sovereign Islands SPA (004124)	AASR	• Habitat loss – permanent (functionally linked habitat) • Habitat loss – temporary (functionally linked habitat) • Disturbance of species
Ballymacoda Bay SPA (004023)	AASR	• Habitat loss – permanent (functionally linked habitat) • Habitat loss – temporary (functionally linked habitat) • Habitat degradation – changes in water quality • Habitat degradation – hydrological changes

Site	Screening Stage	Effects Pathway
		• Habitat degradation – hydrogeological changes • Disturbance of species • Mortality
Blackwater Estuary SPA (004028)	AASR	• Habitat loss – permanent (functionally linked habitat) • Habitat loss – temporary (functionally linked habitat) • Disturbance of species
Blackwater Callows SPA (004094)	AASR	• Habitat loss – permanent (functionally linked habitat) • Habitat loss – temporary (functionally linked habitat) • Disturbance of species
Courtmacsherry Bay SPA (004219)	AASR	• Habitat loss – permanent (functionally linked habitat) • Habitat loss – temporary (functionally linked habitat) • Disturbance of species
The Gearagh SPA (004109)	AASR	• Habitat loss – permanent (functionally linked habitat) • Habitat loss – temporary (functionally linked habitat) • Habitat degradation – hydrological changes • Habitat degradation – hydrogeological changes • Disturbance of species
Blackwater River (Cork/Waterford) SAC (002170)	NIS-AA	• Habitat degradation – changes in water quality • Habitat degradation – spread of invasive species • Mortality

6 Assessment of Adverse Effects on Site Integrity

6.1 Introduction

A summary of the effects on European sites is provided in Table 6-8 Table 6-9 to Table 6with further information provided below. It should be noted that given the strategic nature of the Draft CWS no measures of permanent or temporary habitat loss can be provided at this stage as individual project details have not been developed. Furthermore, as stated in Section 2.5, the identification of a Recommended Approach at a plan level does not confer any consent to develop a project, nor does it preclude other feasible options being considered subsequently.

An appraisal of the individual effects pathways can be found in Section 6.2 whilst an appraisal of the individual sub-catchments can be found in Section 6.3. Conclusions are provided in Section 6.4.

6.2 Appraisal of LSE leading to potential AESI

A figure of all the proposed interventions (i.e. WwTPs, outfalls, transfer lines and pumping stations) comprising the Draft CWS Recommended Approach in relation to European sites can be seen in Figure 6-1.

6.2.1 Habitat Loss – Permanent

Permanent habitat loss is predicted to actually or potentially occur across all three strategy horizons as a result of upgrades and/or new works associated with one WwTP:

- Carrigtwohill (sub-catchment 9).

These losses are predicted to potentially occur to both the Cork Harbour SPA and the Great Island Channel SAC.

As the existing Carrigtwohill WwTP lies within the boundaries of the Cork Harbour SPA and the Great Island Channel SAC any works at this location have the potential to result in loss of the designated area through plant upgrades by 2050 and plant replacement in the 2080 strategy horizon. Thus, the two sites may have a cumulative reduction in area at two strategy horizons. However, the habitat in the immediate vicinity of Carrigtwohill WwTP is terrestrial and is not characteristic of the habitats which the sites are either designated for or of the species which the site(s) supports. Furthermore, plant replacement could happen within the undesignated area immediately east of the existing structure(s).

In addition to construction works at the location of the plant itself, it is anticipated that the existing Carrigtwohill outfall will be extended in the 2055 strategy horizon west down the Slatty Water towards the location of Carrigrennan. This extension is proposed to remove the discharge location from the vicinity of the known areas of saltmarsh habitat (Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]) for which the Great Island Channel SAC is designated. Eutrophication of coastal waters caused by Dissolved Inorganic Nitrogen (DIN) and Phosphorous causes enrichment of saltmarshes which increases primary production and overgrowth of macro-algae (Packham and Willis, 1997). Although it is currently anticipated that the outfall extension would not be on the mudflat surface and the actual discharge location would be within the main body of the Slatty Water outside the intertidal area, it is not inconceivable that the extension could potentially result in the loss of SAC and SPA mudflat habitat depending on the route taken. In addition, the specific details of size, location, construction and route options are unknown at this time. Furthermore, locations have been identified further down the Slatty Water which may be saltmarsh (NPWS, 2014b) and which could be affected. Loss of the mudflat habitat could affect some QI species of the Cork Harbour SPA more than others as some species have greater site fidelity/preference and would be more likely to be affected.

Any permanent habitat loss could have an impact on functionally connected sites such as those that also support the qualifying features of the Cork Harbour SPA (see Table 3-1 for the relevant QI species and connected SPAs). However, given the size of the Cork Harbour SPA and the extent of the mudflats it is expected that impacts to habitats and therefore the QI species resulting from the outfall extension would be minimal and the effect of permanent habitat loss on the SPA network is considered on a precautionary basis only.

6.2.2 Habitat Loss – Temporary

Temporary habitat loss may occur for those approaches associated with WwTP locations within or adjacent to European sites including those described above which are associated with permanent habitat loss and comprise:

- Construction of new infrastructure (treatment plants/storage tanks) at Carrigrennan WwTP;
- Upgrade and replacement of the Carrigtwohill WwTP; and
- Extension of Carrigtwohill outfall.

Works at these locations may result in temporary habitat loss from the Cork Harbour SPA and from the Great Island Channel SAC. Whilst is it anticipated that all new works at Carrigrennan would be constructed with the existing WwTP boundary, there may be works required to facilitate the new plant outside this boundary. Given the proximity of Cork Harbour SPA and Great Island Channel SAC to Carrigrennan, it cannot be ruled out that some temporary land-take from these sites may be possible.

In addition, the construction of new pipelines in and/or immediately adjacent to European sites may result in temporary habitat loss from the Cork Harbour SPA. This would be a specific concern for:

- Sub-catchment 7 as a result of the new pipeline; and
- Sub-catchment 10 where a new pipeline from Cloyne/Saleen to an existing outfall follows the R630 road which is immediately adjacent to the Cork Harbour SPA at Rostellan.

Furthermore, the replacement outfall location for Cloyne (using a location previously used for Whitegate-Aghada) may result in the temporary loss of Cork Harbour SPA habitat during tie-in works at that location.

Any temporary habitat loss could have an impact on functionally connected sites such as those that also support the qualifying features of the Cork Harbour SPA and connected SPAs especially if works are undertaken during the overwintering period. In addition, species that rely on a range of habitats within the site would be able to relocate to an area that is not disturbed; however those that show high levels of preference and fidelity to a specific habitat could be significantly impacted. Mudflat habitat should rapidly reform, however, after disturbance as a result of sediment settling and general accretion from tidal events.

6.2.3 Habitat Degradation – Changes in water quality

All plant optimisation, upgrade and replacement works, and decommissioning works, have the potential to result in changes in water quality as a result of the release of construction materials and site run-off. This all includes the construction of new pipelines such of which will cross watercourses which discharge into Cork Harbour. In addition, some of these works may also result in the inadvertent release of untreated wastewater during upgrade, replacement and decommissioning work. These changes have the potential to occur at all WwTP locations and across all planning horizons. Specific negative issues may occur at locations immediately adjacent to European sites (Cork Harbour SPA and Great Island Channel SAC):

- upgrade and replacement of the Carrigtwohill WwTP;
- extension of Carrigtwohill outfall;

- construction of new pipelines to Carrigrennan WwTP; and
- construction of new outfall/tie-in for Cloyne WwTP.

In addition, changes as a result of the completion of the strategy will result in a general improvement of water quality of discharges/compliance with standards across the Draft CWS area. Moreover, improvements are anticipated at three specific locations:

- Watergrasshill (sub catchment 4) – where there will be a cessation of discharges entering the Blackwater River SAC system. One of the main threats to the site and also a current damaging activity is the high input of nutrients into the system from sewage plants (as well from agricultural run-off) (NPWS, 2016a).
- Carrigtwohill (sub catchment 9) – where relocation of the outfall downstream will reduce the potential impacts from elevated nitrogen and phosphorus levels on saltmarsh habitats of the Great Island Channel SAC.
- Carrigrennan (sub catchment 5) – where new treatment facilities are anticipated to result in improved water quality at the discharge location which lies within Cork Harbour which should benefit wetland habitats across the harbour and therefore the Cork Harbour SPA.

This general improvement in water quality will result in the improvement of discharge from Cork Harbour and into the Celtic Sea. As a result, it is concluded that sites such as the Ballymacoda (Clonpriest and Pillmore) SAC would not be affected by any changes in water quality. This includes any potential improvements in the water discharging from Cork Harbour, as water quality across the area would be influenced by widespread activities around the Celtic Sea as well as the Atlantic Ocean itself.

6.2.4 Habitat Degradation – Hydrological changes

There will be a requirement for a new within stream structure at one location; Carrigtwohill. New infrastructure – such as the extension of the Carrigtwohill outfall – may result in changes to tidal flows leading to an alteration in sediment accretion and erosion. This could affect habitats (i.e. mudflats and saltmarshes) in the Slatty Water within the vicinity of the infrastructure of the two European sites:

- Great Island Channel SAC; and
- Cork Harbour SPA.

Accretion-erosion effects on habitats in the wider Cork Harbour are considered unlikely. Furthermore, although no designs have been progressed, it is currently anticipated that the outfall extension would not be on the mudflat surface or just below it and the actual discharge location would be within the main body of the Slatty Water outside the intertidal area.

Other structures may be required as a result of the increased volume of discharges such as at Carrigrennan although this requirement is currently unknown. However, such structures within Cork Harbour are unlikely to result in significant changes in hydrology given that the structure and functioning of SPA and SAC habitats here is driven by the marine environment. No habitat changes are therefore anticipated within the main body of Cork Harbour nor beyond within the Celtic Sea (for instance to the Ballymacoda (Clonpriest and Pillmore) SAC) where the Atlantic Ocean would have a significant impact.

Any groundworks and excavations could result in permanent changes to water management and the interruption/intervention of surface water flows. A list of habitats associated with the identified SACs and their water dependency status is provided in Appendix C and a summary of surface water and groundwater dependent habitats is provided below in Table 6-1. Four habitats are associated with surface water flows and three of these Water courses of plain to montane levels [3260], Rivers with muddy banks [3270] and alluvial Forests [91E0] are not features of a European site within the CMA area. The former two are features of the Blackwater River (Cork/Waterford) SAC (002170) This site is hydrologically connected only to sub-catchment 4,

specifically the Watergrasshill WwTP and the Draft CWS proposes the cessation of discharges from this WwTP into the Blackwater River catchment. The qualifying habitats lie either much further downstream or in a different part of the catchment and are therefore unlikely to be affected by this change.

Given that The Gearagh SAC lies towards the top of the River Lee catchment and between it and the main part of the River Lee lie two large reservoirs it is concluded that there will be no effects of any hydrological changes within the SAC and therefore no effects on its qualifying habitats (habitats 3260, 3270, 91A0 and 91E0 (Table 6-1)).

It is therefore concluded that the none of the proposed solutions would have any effects of any qualifying habitats of the identified European sites as a result possible changes to surface water flows.

Table 6-1: Qualifying habitats of identified SACs and their water dependency (GW = groundwater, MW = marine water, SW = surface water). Information taken from Mayes (2008). Qualifying habitats dependent on marine water and those not identified for their water dependency are not included).

Habitat Code	Habitat Name	Water Dependency
1130	Estuaries	SW, MW
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	GW, MW
1410	Mediterranean salt meadows (*Juncetalia maritimi*)	GW, MW
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	GW, SW
3270	Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation	GW, SW
91E0	*Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	GW, SW

* Priority habitat

All qualifying species of all the identified SACs were at least partly dependent on surface water (Table 6-2). All the species were also qualifying interests of the Blackwater River (Cork/Waterford) SAC (002170) and only one species – otter – was a qualifying interest of another identified European sites (The Gearagh SAC (000108)).

As previously stated, the Blackwater River (Cork/Waterford) SAC is hydrologically connected only to sub-catchment 4, specifically the Watergrasshill WwTP where it is proposed that discharges from the WwTP will cease. These discharges are a small component of the catchment as a whole and the treated wastewater is discharged to a very minor watercourse near the top of part of the catchment. It is therefore predicted that there will be no effect of the cessation of these discharges on any of the qualifying species of the Blackwater River (Cork/Waterford) SAC.

Works that might affect the lower River Lee – where otters are known to be present (Article 17 records) – are limited to a new pipeline for a replacement WwTP for Ballincollig (sub-catchment 7). Whilst these works may result in the potential for disturbance and/mortality of individual otters (see below) any changes to water flow would be unlikely to affect the otter population in The Gearagh SAC.

Table 6-2: Qualifying species of identified SACs and their water dependency (GW = groundwater, MW = marine water, SW = surface water). Information taken from Mayes (2008). Qualifying species dependent on marine water and those not identified for their water dependency are not included).

Species Code	Species Name	Water Dependency
1029	Freshwater Pearl Mussel (*Margaritifera margaritifera*)	SW
1092	White-clawed Crayfish (*Austropotamobius pallipes*)	SW, GW
1095	Sea Lamprey (*Petromyzon marinus*)	SW, MW
1096	Brook Lamprey (*Lampetra planeri*)	SW
1099	River Lamprey (*Lampetra fluviatilis*)	SW, MW
1103	Twaite Shad (*Alosa fallax fallax*)	SW, MW
1106	Salmon (*Salmo salar*)	SW, MW
1355	Otter (*Lutra lutra*)	SW, MW
1421	Killarney Fern (*Trichomanes speciosum*)	SW

6.2.5 Habitat Degradation – Hydrogeological changes

Any groundworks and excavations could result in permanent changes to water management and changes to groundwater volumes and flows (as well as the interruption/intervention of surface water flows). However, hydrogeological changes resulting in changes to marine water flows are not considered realistic and therefore no habitat changes are anticipated within the main body of Cork Harbour nor beyond within the Celtic Sea.

Table 6-1 indicates that five of the qualifying habitats are at least partly dependent on groundwater although, only one of these habitats – Atlantic salt meadows – is present as a European site feature within the CMA area (as part of the Great Island Channel SAC). Two other features – Mediterranean salt meadows and Alluvial forests – are present within the CMA area as Article 17 habitats. Water courses of plain to montane levels [3260] and Rivers with muddy banks [3270] are not features of any European site within the CMA area and are not present within the DRAFT CMA area as Article 17 habitats.

Only one species – white-clawed crayfish – was partly dependent on groundwater (Table 6-2) and this was a feature of the Blackwater River (Cork/Waterford) SAC (002170). This site, as stated, is hydrologically connected only to sub-catchment 4 (Watergrasshill WwTP), and given the WwTP's location in relation to the Blackwater River catchment works, are not expected to affect the species as a result of hydrogeological changes.

Given that The Gearagh SAC lies at the top of the catchment and between it and the main part of the River Lee lie two large reservoirs it is concluded that there will be no effects of any hydrogeological changes within the SAC.

6.2.6 Habitat Degradation – Changes in air quality

All construction works could result in changes in air quality although as indicated in Section 5 any effects would be limited to 200m of the footprint of any works, vehicle movements etc. Given the geographical spread of the proposed works, it is anticipated that any changes likely to have an effect on a European site would be limited to a few locations; Table 6-3 lists four WwTP locations within 200m of a European site. In particular, Carrigtwohill WwTP is located within both the Cork Harbour SPA and the Great Island Channel SAC and any works located here that result in the production of dust, fumes, noxious particles etc. have the potential to affect habitats and species of the two European sites. In addition to these WwTP locations, the

construction of new pipelines or outfalls also have the potential to affect habitats and species of the two sites. The solutions for sub-catchments 6 and 10 require the construction of a new pipeline. Some of these new pipelines may also be within 200m of a European site. The solution for sub-catchment 9 (Carrigtwohill) also requires the construction of a new outfall the proposed location for which lies within two European sites.

Changes in air quality could cause the direct death of species through, for instance, smothering or toxicity. This could result in a change in the vegetation community or alter the zonation of the communities such as in a saltmarsh.

Table 6-3: Wastewater Treatment Plants and other infrastructure within 200m of European Sites.

Sub-catchment	Location/Works	Sites Potentially Affected	Approximate Distance
5	Carrigrennan WwTP	Cork Harbour SPA	30m
6	New pipeline	Cork Harbour SPA	<10m
9	Carrigtwohill WwTP Carrigtwohill outfall	Cork Harbour SPA Great Island Channel SAC	0m
9	Midleton WwTP	Cork Harbour SPA Great Island Channel SAC	120m
10	Saleen WwTP	Cork Harbour SPA	100m
10	New pipeline	Cork Harbour SPA	<10m

6.2.7 Habitat Degradation – Spread of invasive species

All works across all planning horizons may result in the spread of invasive alien species. American skunk-cabbage (*Lysichiton americanus*), a species listed on Schedule 3 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), is known to be present in the Cork Harbour area and by the lower River Lee (Wilson and Rand, 2025). Other well-known alien species such as giant hogweed (*Heracleum mantegazzianum*), Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Reynoutria japonica*) are also known to be present around Cork Harbour and in the wider CMA area (Southam and Mountford, 2025; Burton and Dehnen-Schmutz, 2025; Stroh and Akeroyd, 2025 respectively). Any works, especially around Cork Harbour and in the vicinity of watercourses, could result in the spread of these and other invasive alien species.

Works at Watergrasshill, which lies at the of one of the tributaries of the Blackwater River catchment could result in the downstream spread of invasive plant propagules (for example giant hogweed/Himalayan balsam seeds). This could result in the degradation of the habitats of the Blackwater River (Cork/Waterford) SAC particularly the habitat Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] within which Himalayan balsam has been identified as an issue (NPWS, 2012a).

As previously stated, saltmarsh habitats in the Great Island Channel SAC have been indicated to be potentially at risk from common cord-grass (NPWS, 2014a) and the conservation objectives for this site seek to ensure no significant expansion of this species. Furthermore, potential saltmarsh sites occur elsewhere within the SAC and it is conceivable that any works within the Slatty Water – such as an extension/construction of a new outfall for Carrigtwohill – could result in the expansion of this species to existing or potential qualifying habitat areas. Mudflat habitats may also be at risk from cordgrass species (NPWS, 2014ab).

6.2.8 Disturbance

In relation to the area of the CMA and the European sites associated with it, only those solutions within 300m of either the Cork Harbour SPA or the Great Island Channel SAC are likely to result in disturbance (see Section 5.1). As the Great Island Channel SAC is designated only for its habitats, only the Cork Harbour SPA designated for its wintering bird species may be affected.

There is, however, the potential for disturbance to mobile species when using supporting habitat within 300m of solutions which are features of a site at a distance to the CMA to be affected. This would include:

- Otters which are a feature of The Gearagh SAC. The SAC is connected to the CMA via the River Lee by a hydrological distance of c. 23km. In addition, Article 17 species data shows widespread otter records especially along this part of the lower River Lee, although outside the SAC area.
- A range of bird species of the Ballycotton Bay SPA, Ballymacoda Bay SPA, Blackwater Callows SPA, Blackwater Estuary SPA, Sovereign Islands SPA and The Gearagh SPA which all share some species with the Cork Harbour SPA and therefore potentially some interconnectivity of sites (see Table 3-1 for QI species). See Table 6-4 for list of locations for potential disturbance.

The Sovereign islands SPA are designated for breeding cormorant which have a mean foraging range of 7km and a maximum foraging range of 35km. The SPA is over 13km from the Draft CWS area and therefore lies outside the mean foraging range. However, all of the works locations noted in Table 6-4 lie within the maximum foraging range.

Table 6-4: Wastewater Treatment Plants and other infrastructure potentially affecting qualifying species by disturbance and relevant SPAs.

Sub-catchment	Location/Works	Species Potentially Affected	Sites Potentially Affected
7	New pipeline across the River Lee	Otter	The Gearagh SAC
1	New pipeline to Carrigrennan	Wintering and breeding birds	Cork Harbour SPA and; Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, Blackwater Estuary, Sovereign Islands and The Gearagh SPAs.
2	New pipeline to Carrigrennan	Wintering and breeding birds	Cork Harbour SPA and; Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, Blackwater Estuary, Sovereign Islands and The Gearagh SPAs.
5	Carrigrennan WwTP	Wintering and breeding birds	Cork Harbour SPA and; Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, Blackwater Estuary, Sovereign Islands and The Gearagh SPAs.

Sub-catchment	Location/Works	Species Potentially Affected	Sites Potentially Affected
6	New pipeline	Wintering and breeding birds	Cork Harbour SPA and; Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, Blackwater Estuary, Sovereign Islands and The Gearagh SPAs.
7	New pipeline	Wintering and breeding birds	Cork Harbour SPA and; Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, Blackwater Estuary, Sovereign Islands and The Gearagh SPAs.
9	Carrigtwohill WwTP Midelton WwTP New outfall for Carrigtwohill	Wintering and breeding birds	Cork Harbour SPA and; Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, Blackwater Estuary, Sovereign Islands and The Gearagh SPAs.
10	Saleen WwTP New pipeline	Wintering and breeding birds	Cork Harbour SPA and; Ballycotton Bay, Ballymacoda Bay, Blackwater Callows, Blackwater Estuary, Sovereign Islands and The Gearagh SPAs.

Whilst the works for sub-catchment 7 (a new pipeline under the River Lee) may result in the potential for disturbance (and/or mortality) of individual otters this would be unlikely to affect the favourable conservation condition of Otter in The Gearagh SAC. Furthermore, otter territories are generally within the range of c. 7.5km for females and up to 21km for males via hydrological pathways (Ó Néill et al. 2009). This would be just outside the hydrological distance of the SAC from the Draft CWS of approximately 23km, and significantly greater than approximate 33km of the SAC from the Ballincollig WwTP which the new pipeline. It is therefore concluded that the proposed pipeline would not disturb any otters that would have an effect on the population of the species in The Gearagh SAC.

6.2.9 Mortality

Only one WwTP – Carrigtwohill (sub-catchment 9) – lies within any European site. The WwTP is located within the Cork Harbour SPA and the Great Island Channel SAC. There is therefore the theoretical possibility of construction works resulting in the mortality of species of the Cork Harbour SPA. However, habitats within the WwTP are not *generally* characteristic of those types that support those species nor of the habitat for which the SPA is noted for i.e. wetland. It should be noted though, that some of the qualifying species, such as black-headed gull and lesser black-backed gull, are known to utilise urban and semi-urban areas and may therefore be present at the plant. Any mortality of such species could affect the population within the site or

with other SPAs which support the species such as Ballycotton Bay and SPA Ballymacoda Bay SPA. Other species and other sites could also be affected (see Table 3-1).

Mortality of species may also occur as a result of works at WwTPs and other infrastructure such as Carrigrennan WwTP and new pipelines.

Otters which are a feature of The Gearagh SAC which is connected to the CMA via the River Lee by a hydrological distance of c. 23km. In addition, Article 17 species data shows widespread otter records especially along the lower River Lee and in the vicinity of Ballincollig WwTP. The Recommended Approach for this WwTP proposes a greenfield site for the new plant and a new pipeline under the River Lee. This could result in the mortality of individual otters this would be unlikely to affect the favourable conservation condition of Otter in The Gearagh SAC. However, as previously noted for *Disturbance*, the distance between the location of the proposed pipeline and the SAC (approximately 33km) is much greater than the general size of otter territories and therefore any effects on otters at the location is unlikely to affect the SAC population as a result of mortality.

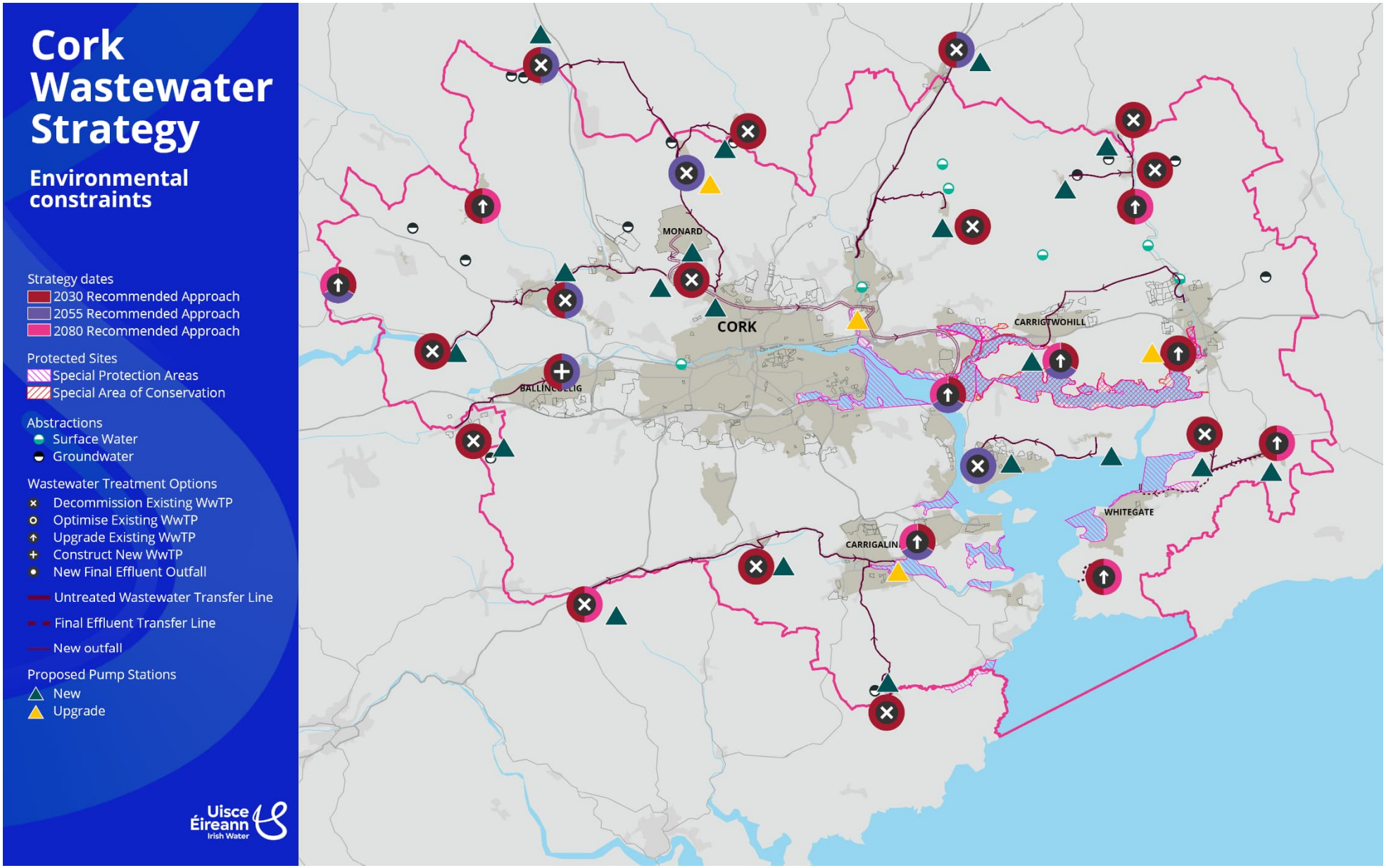

Figure 6-1: Overview of all interventions comprising the Draft CWS Recommended Approach in relation to European Sites

6.3 Appraisal of Individual Sub-Catchment Recommended Approaches

Across all sub-catchment solutions, all construction and decommissioning works could result in pollution resulting in changes in water quality in waterbodies including potentially in Cork Harbour, although these changes are likely to be localised and temporary in nature. Works could also result in the release of untreated wastewater during upgrade and replacement and decommissioning which could result in changes in water quality. These have the potential to impact mudflats, saltmarshes and other habitats within Cork Harbour affecting the foraging resources of the qualifying interests of Cork Harbour SPA, and also the structure and function of the habitats themselves including those of Great Island Channel SAC. Where habitats of the Cork Harbour SPA could be impacted, there is also the potential for qualifying interests of the other identified SPAs to be affected.

Some of the watercourses discharging into Cork Harbour are at a distance from or are downstream of the Great Island Channel SAC such as the River Lee or the Minane River. Changes in water quality in rivers discharging into the outer part of Cork Harbour – such as the Minane River (works associated with sub-catchment 6) are considered unlikely to have an effect on the Great Island Channel SAC given the physical separation and the dilution effect of Cork Harbour itself. Changes in water quality in rivers discharging into the upper part of Cork Harbour – such as the River Lee – are included taking into account the precautionary principle.

Specific issues relating to the individual sub-catchments are described below and a summary is provided in Table 6-5 for the Cork Harbour SPA and Table 6-6 for the Great Island Channel SAC.

It should be noted that the Draft CWS includes individual elements which are either ongoing projects or under construction such as the pipeline between Killumney and Ballincollig (sub-catchment 7). As these elements have already been through environmental impact assessment and NIS-AA as necessary, they are not included in the individual appraisals below.

Table 6-5: Summary of LSEs identified for each sub-catchment for the Cork Harbour SPA. Habitat degradation comprises changes to water quality (WQ), air quality (AQ) or invasive alien species (IAS).

Sub-catchment	Habitat Loss (perm)	Habitat Loss (temp)	Habitat Degradation	Disturbance	Mortality
1	No	No	WQ	No	No
2	No	No	WQ	No	No
3	No	No	WQ	No	No
4	No	No	WQ	No	No
5	No	Yes	WQ*, AQ	Yes	Yes
6	No	No	WQ, AQ	Yes	Yes
7	No	Yes	WQ, AQ	No	No
8	No	No	WQ	No	No
9	Yes	Yes	WQ, AQ, IAS	Yes	Yes
10	No	Yes	WQ, AQ	Yes	Yes
11	No	No	WQ	No	No

* Potential benefits from changes to water quality

Recommended approaches for four sub-catchments (5, 7, 9 and 10) were concluded to have the potential for habitat loss (permanent and/or temporary). Four sub-catchments (5, 6, 9 and 10) were also concluded to have

the potential to result in disturbance and mortality of QI species. Sub-catchment 10 was concluded to potentially result in habitat degradation as a result of the spread of alien species. It should be noted that these effects on the Cork Harbour SPA could also result in effects on the other identified SPAs (Ballycotton Bay SPA, Sovereign Islands SPA, Ballymacoda Bay SPA, Blackwater Estuary SPA, Blackwater Callows SPA, Courtmacsherry Bay SPA, The Gearagh SPA) due to the area acting as supporting habitat for those sites.

Table 6-6: Summary of LSEs identified for each sub-catchment for the Great Island Channel SAC. Habitat degradation comprises changes to water quality (WQ), air quality (AQ) or invasive alien species (IAS).

Sub-catchment	Habitat Loss (perm)	Habitat Loss (temp)	Habitat Degradation	Disturbance	Mortality
1	No	No	WQ	No	No
2	No	No	WQ	No	No
3	No	No	WQ	No	No
4	No	No	WQ	No	No
5	No	Yes	WQ*, AQ	No	No
6	No	No	No	No	No
7	No	No	No	No	No
8	No	No	No	No	No
9	Yes	Yes	WQ*, AQ, IAS	No	No
10	No	No	No	No	No
11	No	No	No	No	No

* Potential benefits of changes to water quality

Recommended approaches for two sub-catchments (5 and 9) were concluded to have the potential for habitat loss (permanent and/or temporary) from the Great Island Channel SAC, whilst six sub-catchments were concluded to potentially result in habitat degradation as a result of changes to water quality (1, 2, 3, 4, 5 and 9). Two sub-catchments were also concluded to potentially result in habitat degradation as a result of changes to air quality (catchments 5 and 9) and the recommended approach for one sub-catchment (9) was concluded to potentially result in habitat degradation as a result of the spread of alien species.

6.3.1 Sub-Catchment 1: Blarney, Courtbrack, Dripsey and Inniscarra

Other than changes to water quality potentially affecting the Great Island Channel SAC and Cork Harbour SPA, no other potential impacts of this sub-catchment have been identified.

6.3.2 Sub-Catchment 2: Kileens and Monard

Other than changes to water quality potentially affecting the Great Island Channel SAC and changes to water quality and air quality affecting the Cork Harbour SPA, no other potential impacts of this sub-catchment have been identified.

6.3.3 Sub-Catchment 3: Carrignavar, Grenagh and Whitechurch

Other than changes to water quality potentially affecting the Great Island Channel SAC and Cork Harbour SPA, no other potential impacts of this sub-catchment have been identified.

6.3.4 Sub-Catchment 4: Knockraha and Watergrasshill

Other than changes to water quality potentially affecting the Great Island Channel SAC and Cork Harbour SPA, no other potential impacts of this sub-catchment have been identified.

However, the cessation of treated wastewater discharges to a small stream Flesk (Bride) which is a tributary of the Blackwater River will potentially improve water quality within the Blackwater River catchment and therefore within the Blackwater River (Cork/Waterford) SAC. This would potentially benefit those qualifying interests susceptible to poor water quality such as freshwater pearl mussel, white-clawed crayfish, fish species and freshwater habitats.

Qualifying habitats of the Blackwater River (Cork/Waterford) SAC have been indicated to be at risk from invasive species. In particular, Himalayan balsam is one of the most common invasive species in the habitat Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] (NPWS, 2012a).

6.3.5 Sub-Catchment 5: Carrigrennan

Upgrades to the WwTP at various times across the three planning horizons may potentially cause disturbance to qualifying species of the Cork Harbour SPA. If disturbance is also to those species which are also qualifying interests of other SPAs, the wider SPA network could also be affected. Given the proximity of the Carrigrennan to the Cork Harbour SPA and Great Island Channel SAC, construction works could result in effects on air quality which could damage SPA and/or SAC habitats.

As the upgrades are predicted to be within the existing site boundary, no potential permanent land-take from either the Cork Harbour SPA or the Great Island Channel SAC is predicted. However, temporary land-take could be required from European sites to facilitate the permanent works.

However, the upgrades are anticipated to result in improved water quality at the discharge location which lies within Cork Harbour. Although the discharge location is outside any European site boundaries, the improvement in water quality has the potential to benefit SPA/SAC habitats and the species they support, as well as the supporting habitat and functionality that the wider Cork Harbour area supplies.

6.3.6 Sub-Catchment 6: Ballygarvan, Halfway and Minane Bridge (River Valley)

Construction of the wastewater pipeline could result in the disturbance of qualifying interests of the Cork Harbour SPA. If disturbance is also to those species which are also qualifying interests of other SPAs, the wider SPA network could also be affected. Given the potential proximity of the proposed pipeline to the Cork Harbour SPA, construction works could result in effects on air quality which could damage SPA habitats.

Construction of the wastewater pipeline could also result in the mortality of SPA qualifying interests where works are adjacent to or coincide with SPA areas or important supporting habitat.

No potential effects on the Great Island Channel SAC are predicted.

6.3.7 Sub-Catchment 7: Ballincollig and Killumney

The untreated wastewater pipeline from Killumney to Ballincollig is an ongoing project and is therefore not part of this assessment.

Construction of the other wastewater pipelines could result in the temporary loss of habitat from the Cork Harbour SPA. This would depend, however, on the exact route taken. Construction could also lead to disturbance of qualifying interests of the Cork Harbour SPA. If disturbance is also to those species which are also qualifying interests of other SPAs, the wider SPA network could also be affected. Given the potential

proximity of the proposed pipeline to the Cork Harbour SPA, construction works could result in effects on air quality which could damage SPA habitats.

Construction of the wastewater pipeline could also result in the mortality of SPA qualifying interests where works are adjacent to or coincide with SPA areas or important supporting habitat.

Construction of the new pipeline to service the new site for Ballincollig WwTP passes under the River Lee which is connected to The Gearagh SAC which lies c. 23km upstream. The proposed works could potentially result in the disturbance and/or mortality of individual otters. However, given the physical separation of the proposed pipeline from the SAC it is considered that the works would be unlikely affect the otter population within the SAC and would not affect the conservation objective or its constituent attributes (To maintain the favourable conservation condition of Otter in The Gearagh SAC – NPWS, 2016b).

6.3.8 Sub-Catchment 8: Cork Lower Harbour

Other than changes to water quality potentially affecting the Cork Harbour SPA, no other potential impacts of this sub-catchment have been identified.

6.3.9 Sub-Catchment 9: Carrigtwohill and Midleton

The existing Carrigtwohill WwTW is within the designated area (terrestrial habitat) of both the Great Island Channel SAC and the Cork Harbour SPA. Optimisation would not require land-take from the two European sites, however upgrades and replacement could result in land-take, although there is undesignated land available immediately adjacent to the existing structures and within UE's land holding.

In addition, to prevent potential impacts of nitrogen and phosphorus on the saltmarshes within the Slatty Water from Carrigtwohill discharges, the outfall will be relocated to a point further down the Slatty Water. However, this new discharge point would still be located within Great Island Channel SAC and the Cork Harbour SPA. Although the specific details of size, location and construction of the discharge point are unknown at this time as they would be determined at project-level design, it would be located within the main water channel and therefore not within the intertidal area.

All these construction works have the potential to disturb the qualifying interests of the Cork Harbour SPA. If disturbance is also to those species which are also qualifying interests of other SPAs, the wider SPA network could also be affected. Given the presence of Carrigtwohill WwTP and proposed new discharge location within Cork Harbour SPA and Great Island Channel SAC, construction works could result in effects on air quality which could damage SPA habitats.

The construction works could also result in the mortality of SPA qualifying interests where works are adjacent to or coincide with SPA areas or important supporting habitat.

Construction works, especially those related to the new outfall location, could result in the spread of common cord-grass an invasive species of saltmarshes damaging this feature at mapped and potential sites in the Great Island Channel SAC. Cord-grass species have also colonised mudflat areas within Cork Harbour.

The Midleton WwTP is c.100m at its nearest point from the boundaries of the Great Island Channel SAC and the Cork Harbour SPA but separated from them by the N25 East Cork Parkway which also screens the sites from the WwTP. Upgrade and replacement works at Midleton have the potential to result in the disturbance of qualifying interests of the Cork Harbour SPA but given the screening this is considered to be precautionary.

6.3.10 Sub-Catchment 10: Ballymore, Cloyne, Saleen, North Cobh and Whitegate-Aghada

Construction of the wastewater pipeline could result in the disturbance of qualifying interests of the Cork Harbour SPA. If disturbance is also to those species which are also qualifying interests of other SPAs, the wider SPA network could also be affected. Given the potential proximity of the proposed pipeline and of

Saleen WwTP to the Cork Harbour SPA, construction works could result in effects on air quality which could damage SPA habitats.

Construction of the wastewater pipeline could also result in the mortality of SPA qualifying interests where works are adjacent to or coincide with SPA areas or important supporting habitat.

As the new wastewater pipeline is proposed to be constructed along the line of the main road (R630) at Rostellan no land-take from the Cork Harbour SPA is predicted. In addition, reuse of an existing discharge point at Rostellan will also avoid SPA land-take. However, there is the possibility that tie-in of the new pipeline with the existing discharge point could result in the temporary loss and/or disturbance of SPA habitat.

6.3.11 Sub-Catchment 11: Ballincurrig, Lisgoold North, Lisgoold South and Leamlara

Other than changes to water quality potentially affecting the Cork Harbour SPA, no other potential impacts of this sub-catchment have been identified.

6.4 Conclusion of the Assessment of Effects

The Draft CWS was considered to have the potential for effects (prior to mitigation) on three European sites:

- Great Island Channel SAC;
- Cork Harbour SPA; and
- Blackwater River (Cork/Waterford) SAC;

The potential effects to the Blackwater River (Cork/Waterford) SAC were included on a precautionary basis. The assessment of effects

Those individual components of the Recommended Approaches of the Draft CWS, their potential effects and the mitigation required to avoid AESI for these four European sites are presented in Table 6-7, Table 6-8 and Table 6-9 (mitigation information is provided in detail in Section 8).

No potential effects of any of the components of the Draft CWS could be identified for the following sites:

- Ballymacoda (Clonpriest and Pillmore) SAC (000077); and
- The Gearagh SAC (000108).

This was due to the physical separation of the area of the Draft CWS and the various components of it from the sites and their QIs together with the results of the detailed examination of the various possible effects pathways to them. In particular, The Gearagh SAC lies upstream of the area of the Draft CWS and only the QI species otters were identified as potentially affected. However, only one element of the Draft CWS – a new pipeline under the River Lee – was considered to potentially affect otters and the location of this would be approximately 33km hydrologically from the SAC, a distance significantly greater than the expected size of otter territory. Thus it was concluded that there would be no realistic effect on the otter population of the SAC.

Any potential effects on a group of SPAs which also share QI species with the Cork Harbour SPA it was concluded would be fully mitigated through the measures identified for Cork Harbour SPA. These sites were:

- Ballycotton Bay SPA (004022);
- Ballymacoda Bay SPA (004023);
- Blackwater Estuary SPA (004028);
- Blackwater Callows SPA (004094);

- The Gearagh SPA (004109);
- Sovereign Islands SPA (004124); and
- Courtmacsherry Bay SPA (004219).

Table 6-7: Appropriate Assessment for the Great Island Channel SAC (001058)

Pathway Name	Sub-catchment	Elements of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
Habitat Loss – permanent	9	Carrigtwohill: Upgrade/replace existing plant (which lies within the SAC area) in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon.	Maintain habitat area. No decline or change in habitat distribution.	Construction works, especially at the WwTP, could result in land-take from the SAC area. Whilst the known areas of saltmarsh are not likely to be affected, additional areas of potential saltmarsh could be lost as a result of outfall (pipeline) works. Although this effect is considered unlikely, given that details of the specific size, location and construction of the pipeline are unknown at this time the effect is not inconceivable. Mudflat habitats may also be lost, however this is unlikely to be permanent as sedimentation/settling of mudflats is likely to quickly occur and, as a result, there would be no long-term change in habitat distribution. This habitat is also widespread across the Cork Harbour area.	Project-level design to microsite new infrastructure to locations outside the SAC site boundary. Detailed site assessment of project area to determine ecological importance to SAC habitats including potential areas of saltmarsh habitat. Project-level design to microsite new infrastructure to locations outside any newly identified areas of saltmarsh.	No AESI
Habitat loss - temporary	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	Maintain habitat area. No decline or change in habitat distribution.	Construction works could result in temporary land-take from the SAC area to facilitate the permanent works. Whilst the known areas of saltmarsh are not likely to be affected, additional areas of potential saltmarsh could be lost. This includes surveyed areas of the SAC. Mudflat habitats may also be affected; however, this is likely to be short-lived due to sedimentation/settling of the mudflats. In addition, this habitat is widespread across the Cork Harbour area.	Project-level design to microsite new infrastructure to locations outside the SAC site boundary. Detailed site assessment of project area to determine ecological importance to SAC habitats including potential areas of saltmarsh habitat. Project-level design to microsite new infrastructure to locations outside any newly identified areas of saltmarsh.	No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon.				No AESI
Habitat degradation – changes in water quality	1	Blarney: Construct untreated Ww pipeline to Carrigrennan via Monard in the 2030 strategy horizon. Courtbrack: Upgrade WwTP in the 2030 strategy horizon; Replace WwTP in the 2080 strategy horizon. Dripsey: Upgrade WwTP in the 2055 strategy horizon.	Maintain habitat area. No decline or change in habitat distribution. Conserve the community type in a natural condition. Maintain vegetation zonation.	Construction works could lead to pollution impacts, including sedimentation, to watercourses and habitats. Pollution could directly kill areas of vegetation on saltmarsh or change its zonation. This could be permanent or short-term depending on the pollutant. Pollution could also	All works to be undertaken according to good construction practice.	No AESI

Pathway Name	Sub-catchment	Elements of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
		Inniscarra: Decommission WwTP in the 2030 strategy horizon; Construct untreated Ww pipeline to Blarney in the 2030 strategy horizon.		affect the macro-invertebrate populations of the mudflats.		
	2	Kileens/Monard: Construct untreated Ww pipeline to Carrigrennan in the 2030 strategy horizon via Cork City Network.				No AESI
	3	Carrignavar: Decommission WwTP in the 2030 strategy horizon; Construct untreated Ww pipeline to Whitechurch WwTP in the 2030 strategy horizon. Grenagh: Decommission WwTP in the 2055 strategy horizon; Construct untreated Ww pipeline to Whitechurch WwTP in the 2055 strategy horizon. Whitechurch: Decommission WwTP in the 2055 strategy horizon; Construct untreated Ww pipeline to Cork City Network in the 2055 strategy horizon.				No AESI
	4	Knockraha: Decommission WwTP in the 2030 strategy horizon; Construct untreated Ww pipeline to Glanmire pumping station in the 2030 strategy horizon. Watergrasshill: Decommission WwTP in the 2055 strategy horizon; Construct untreated Ww pipeline to Glanmire pumping station 2055.				No AESI
	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.				No AESI
	7	Ballincollig: Construct new WwTP on greenfield site including new Ww pipeline across the River Lee.				No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon. Midleton: Upgrade existing plant in the 2030 strategy horizon; Replacement in the 2080 strategy horizon.				No AESI
	11	Lisgoold South: Upgrade existing plant in the 2030 strategy horizon; Replacement in the 2080 strategy horizon. Leamlara: Construct new untreated Ww pipeline to Lisgoold South WwTP.				No AESI

Pathway Name	Sub-catchment	Elements of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
Habitat degradation – hydrological changes	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon.	Maintain habitat area. No decline or change in habitat distribution. Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions. Maintain natural tidal regime.	New infrastructure could change the way sediments circulate and tidal effects. This could alter sedimentation and accretion which would be a particular concern for saltmarsh habitats.	Project-level design to ensure no surface structures which would cause physical obstruction to normal sediment/tidal flows. All works to be undertaken according to good construction practice.	No AESI
Habitat degradation – hydrogeological changes	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Habitat degradation – changes in air quality	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	Maintain habitat area. No decline or change in habitat distribution. Conserve the community type in a natural condition. Maintain vegetation zonation.	Construction works could result in the release of dust, fumes and noxious particles. These impacts could lead to the degradation of habitats, including changes in the community type and/or their zonation, and ultimately their loss depending on the extent of the impact. However, effects are likely to be localised to the area of the works being undertaken.	All works to be undertaken according to good construction practice.	No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and strategy horizon. Extend existing outfall down the Slatty Water in the 2055 strategy horizon. Midleton: Upgrade existing plant in the 2030 strategy horizon; Replacement in the 2080 strategy horizon.				No AESI
Habitat degradation – spread of invasive species	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon.	Maintain habitat area. No decline or change in habitat distribution. Conserve the community type in a natural condition. Maintain vegetation zonation.	Construction works could result in the spread of invasive alien species including common cord-grass which could alter vegetation communities or their zonation.	Detailed site assessment of project area to identify areas of invasive alien species. Biosecurity management plan to control risk of Schedule 3 invasive species in particular common cord-grass colonisation.	No AESI
	All sub-catchments	All works including operational maintenance works.		All works could result in the spread of invasive alien species which could alter vegetation communities or their zonation.		No AESI
Disturbance of species	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Mortality	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Improvement in site condition	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	No decline or change in habitat distribution. Conserve the community type in a natural condition. Maintain vegetation zonation.	Water quality at the discharge location is predicted to improve.	None required	No AESI
	9	Carrigtwohill: Extend existing outfall down the Slatty Water in the 2055 strategy horizon.		Potential impacts to known saltmarsh areas from elevated levels nitrogen and phosphorus expected to be avoided.		No AESI

Table 6-8: Appropriate Assessment for the Cork Harbour SPA (004030)

Pathway Name (LSE)	Sub-catchment	Sub-catchment and Components of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
Habitat Loss – permanent	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty water in the 2055 strategy horizon.	Maintain wetland habitat area. Maintain species population and distribution.	Construction works could result in land-take from the SPA area. This land-take could result in the displacement of species affecting the population in the long-term, especially if a key location for species. Land-take could also affect the distribution of individual species across the SPA.	Project-level design to microsite new infrastructure to locations outside the SPA site boundary. Detailed site assessment of project area to determine ecological importance of the area to the qualifying species.	No AESI
Habitat loss - temporary	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	Maintain wetland habitat area. Maintain species population and distribution.	Construction works could result in temporary land-take from the SPA area to facilitate the permanent works. This land-take, even if temporary, could result in the displacement of species affecting the population in the long-term, especially if a key location for species. Land-take could also affect the distribution of individual species across the SPA.	Project-level design to maximise distance between pipeline/infrastructure and SPA and avoid requirement for temporary land-take where possible. Detailed site assessment of project area to determine ecological importance of the area to the qualifying species. Schedule any temporary land-take to be outside the period	No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon.				No AESI
	10	Cloyne: Construct new pipeline, including tie-in with existing outfall, to Rostellan in the 2030 strategy horizon.				No AESI
Habitat degradation – changes in water quality	1	Blarney: Construct untreated WW pipeline to Carrigrennan via Monard in the 2030 strategy horizon. Courtbrack: Upgrade WwTP in the 2030 strategy horizon; Replace WwTP in the 2080 strategy horizon. Dripsey: Upgrade WwTP in the 2055 strategy horizon. Inniscarra: Decommission WwTP in the 2030 strategy horizon; Construct untreated Ww pipeline to Blarney in the 2030 strategy horizon.	Maintain wetland habitat area. Maintain species population and distribution.	Construction works could lead to pollution impacts to watercourses and habitats. These impacts could lead to the degradation of habitats and ultimately their loss depending on the extent of the impact. Furthermore, due to the mobile nature of pollutants these losses could be at a distance to the pollution source. Degradation/loss of habitats could also affect the population of the SPA in the long-term as well as the distribution of individual species across the SPA.	All works to be undertaken according to good construction practice.	No AESI
	2	Kileens/Monard: Construct untreated WW pipeline to Carrigrennan in the 2030 strategy horizon via Cork City Network.				No AESI
	3	Carrignavar: Decommission WwTP in the 2030 strategy horizon; Construct untreated WW pipeline to Whitechurch WwTP in the 2030 strategy horizon. Grenagh: Decommission WwTP in the 2055 strategy horizon; Construct untreated WW pipeline to Whitechurch WwTP in the 2055 strategy horizon. Whitechurch: Decommission WwTP in the 2055 strategy horizon; Construct untreated WW pipeline to Cork City Network in the 2055 strategy horizon.				No AESI

Pathway Name (LSE)	Sub-catchment	Sub-catchment and Components of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
	4	Knockraha: Decommission WwTP in the 2030 strategy horizon; Construct untreated WW pipeline to Glanmire pumping station in the 2030 strategy horizon. Watergrasshill: Decommission WwTP in the 2055 strategy horizon; Construct untreated WW pipeline to Glanmire pumping station 2055.				No AESI
	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.				No AESI
	6	Ballygarvan: Construct untreated WW pipeline to Carrigaline in the 2030 strategy horizon. Halfway: Construct untreated WW pipeline to Ballygarvan in the 2080 strategy horizon. Minane Bridge: Construct untreated WW pipeline to Carrigaline in the 2030 strategy horizon				No AESI
	7	Ballincollig: Construct new WwTP on greenfield site including new WW pipeline across the River Lee.				No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon. Midleton: Upgrade existing plant in the 2030 strategy horizon; Replacement in the 2080 strategy horizon.				No AESI
	10	Cloyne: Upgrade existing WwTP in the 2030 strategy horizon and replace/upgrade in the 2080 strategy horizon; Construct new pipeline, including tie-in with existing outfall, to Rostellan in the 2030 strategy horizon.				No AESI
	11	Lisgoold South: Upgrade existing plant in the 2030 strategy horizon; Replacement in the 2080 strategy horizon. Leamlara: Construct new untreated Ww pipeline to Lisgoold South WwTP.				No AESI
Habitat degradation – hydrological changes	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon.	Maintain wetland habitat area. Maintain species population and distribution.	New infrastructure could change the way sediments circulate and tidal effects. This could alter sedimentation and accretion which could change the area of wetland habitat available and therefore the populations and distribution of bird species.	Project-level design to ensure no surface structures which would cause physical obstruction to normal sediment/tidal flows. All works to be undertaken according to good construction practice.	No AESI

Pathway Name (LSE)	Sub-catchment	Sub-catchment and Components of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
Habitat degradation – hydrogeological changes	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Habitat degradation – changes in air quality	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	Maintain wetland habitat area. Maintain species population and distribution.	Construction works could result in the release of dust, fumes and noxious particles. These impacts could lead to the degradation of habitats and ultimately their loss depending on the extent of the impact. However, effects are likely to be localised to the area of the works being undertaken. Degradation/loss of habitats could also affect the population of the SPA in the long-term as well as the distribution of individual species across the SPA.	All works to be undertaken according to good construction practice.	No AESI
	6	Ballygarvan: Construct untreated Ww pipeline to Carrigaline in the 2030 strategy horizon. Minane Bridge: Construct untreated Ww pipeline to Carrigaline in the 2030 strategy horizon.				No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon. Midleton: Upgrade existing plant in the 2030 strategy horizon; Replacement in the 2080 strategy horizon.				No AESI
	10	Cloyne: Construct new pipeline, including tie-in with existing outfall, to Rostellan in the 2030 strategy horizon.				No AESI
Habitat degradation – spread of invasive species	All sub-catchments	All works including operational maintenance works.	Maintain wetland habitat area. Maintain species population and distribution.	All works could result in the spread of invasive alien species. In particular, common cord-grass has colonised the intertidal flats in places in Cork Harbour (NPWS, 2014). This could result in the loss of wetland habitat suitable for the QIs which could in turn affect the populations and distributions of the various bird species.	All works to be undertaken under biosecurity protocols and management plans as required.	No AESI
Disturbance of species	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	Maintain species population and distribution.	Construction works could result in the disturbance of overwintering and breeding birds (cormorant). Disturbance would be limited to those areas used by the qualifying species but could affect the populations and distributions of the various bird species across the site as a result of displacement. Species which have high fidelity/habitat preferences could be significantly affected if forced to relocate if works are carried out during the overwintering period.	Project-level design to maximise distance between pipeline/infrastructure and SPA. Undertake construction works outside the overwintering period for qualifying interests. Detailed site assessment of project area to determine ecological importance of the area for cormorant. Detailed site assessment of project area to determine ecological importance of the area to the qualifying species for works within overwintering period to identify additional mitigation as necessary. All works to be undertaken according to good construction practice.	No AESI
	6	Ballygarvan: Construct untreated Ww pipeline to Carrigaline in the 2030 strategy horizon. Minane Bridge: Construct untreated Ww pipeline to Carrigaline in the 2030 strategy horizon.				No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon. Midleton: Upgrade existing plant in the 2030 strategy horizon.				No AESI

Pathway Name (LSE)	Sub-catchment	Sub-catchment and Components of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
		Replacement in the 2080 strategy horizon.				
	10	Cloyne: Construct new pipeline, including tie-in with existing outfall, to Rostellan in the 2030 strategy horizon.				No AESI
Mortality	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	Maintain species population and distribution.	Construction works could result in the mortality of overwintering and breeding birds (cormorant). Species which have high fidelity/ habitat preferences may be significantly affected, altering their population and distribution. This effect would be mainly limited to the overwintering period.	Project-level design to maximise distance between pipeline/ infrastructure and SPA. Undertake construction works outside the overwintering period for qualifying interests. Detailed site assessment of project area to determine ecological importance of the area for cormorant. Detailed site assessment of project area to determine ecological importance of the area to the qualifying species for works within overwintering period to identify additional mitigation as necessary. All works to be undertaken according to good construction practice.	No AESI
	6	Ballygarvan: Construct untreated Ww pipeline to Carrigaline in the 2030 strategy horizon. Minane Bridge: Construct untreated Ww pipeline to Carrigaline in the 2030 strategy horizon.				No AESI
	9	Carrigtwohill: Upgrade/replace existing plant in the 2055 and 2080 strategy horizon; Extend existing outfall down the Slatty Water in the 2055 strategy horizon. Midleton: Upgrade existing plant in the 2030 strategy horizon; Replacement in the 2080 strategy horizon.				No AESI
	10	Cloyne: Construct new pipeline, including tie-in with existing outfall, to Rostellan in the 2030 strategy horizon.				No AESI
Improvement in site condition	5	Carrigrennan: Construct new infrastructure at 2030, 2055 and 2080.	None applicable.	Water quality at the discharge location is predicted to improve. Although this is no specific conservation objective for the SPA relating to water quality, improvements are likely to contribute to maintaining the "*favourable conservation condition of the wetland habitat in Cork Harbour SPA as a resource for the regularly-occurring migratory waterbirds that utilise it*."	None required	No AESI

Table 6-9: Appropriate Assessment for the Blackwater River (Cork/Waterford) SAC (002170)

Pathway Name	Sub-catchment	Elements of the Recommended Approach likely to result in an effect	Conservation Objective Attribute Potentially Undermined	Effect	Mitigation	Conclusion
Habitat Loss – permanent	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Habitat loss - temporary	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Habitat degradation – changes in water quality	4	Watergrasshill: Decommission WwTP in the 2055 strategy horizon; Construct untreated WW pipeline to Glanmire pumping station 2055.	Maintain high water quality	Decommissioning and Construction works could lead to pollution impacts to watercourses and habitats.	All works to be undertaken according to good construction practice.	No AESI
Habitat degradation – hydrological changes	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Habitat degradation – hydrogeological changes	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Habitat degradation – changes in air quality	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Habitat degradation – spread of invasive species	4	Watergrasshill: Decommission WwTP in the 2055 strategy horizon; Construct untreated WW pipeline to Glanmire pumping station 2055; Ongoing maintenance works.	Invasive species are absent or under control	Works could result in the spread of invasive alien species down the Blackwater River catchment.	All works to be undertaken under biosecurity protocols and management plans as required.	No AESI
Disturbance of species	n/a	None identified	Not applicable	Not applicable	Not applicable	No AESI
Mortality	4	Watergrasshill: Decommission WwTP in the 2055 strategy horizon; Construct untreated WW pipeline to Glanmire pumping station 2055; Ongoing maintenance works.	Restore the favourable conservation condition of the freshwater pearl mussel, sea lamprey, twaite shad, otter. Maintain the favourable conservation condition of white-clawed crayfish, brook lamprey, river lamprey, Atlantic salmon.	Decommissioning, Construction and Maintenance works could lead to pollution impacts to watercourses and habitats, which could lead to the mortality of qualifying species.	All works to be undertaken under biosecurity protocols and management plans as required.	No AESI
Improvement in site condition	4	Watergrasshill: Decommission WwTP in the 2055 strategy horizon; Construct untreated WW pipeline to Glanmire pumping station 2055.	Maintain high water quality	The cessation of treated wastewater discharges to the Blackwater River catchment should benefit species susceptible to poorer water quality.	Not applicable	No AESI

7 Mitigation

Mitigation measures will be necessary to remove, avoid or reduce the impacts identified in this appropriate assessment to a level where they will no longer affect a European site. The Draft CWS is one of the subsidiary 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 the NIS for the WSSP required that actions relating to wastewater management required that "*Lower tier plans and/or interventions will be required to comply with the Habitats Regulations and undergo AA where necessary*."

7.1 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 (established and reliable measures identified to avoid specific potential effects on European sites).
- Further assessments and data collection.

These measures will be applied unless project-level AAs or project-specific environmental assessments demonstrate that they are not required (i.e. the predicted effect will not occur), not appropriate, or that alternative or additional measures are necessary or more appropriate.

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 CWA will be required to comply with the Habitats Regulations and undergo AA (and other environmental assessments and consenting) where necessary.

General Mitigation Measures

Preferred Solution Design and Planning

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 to affect European sites during their construction (or operation).

These assessments will consider or identify, but not be limited to:

- potential for avoiding effects on European sites through design (e.g. alternative pipeline routes; micro siting; etc.);
- 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
- seasonal restrictions to avoid construction during key qualifying interest activity (e.g. over-wintering birds).

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 Draft CWS as a minimum standard, unless project-specific investigations identify additional measures and/or more appropriate non-standard approaches for dealing with potential site-derived pollutants.

General Measures for Species and Habitats

Most species-specific avoidance or mitigation measures can only be determined at the Recommended Approach project level, following detailed project-specific surveys. Detailed species-specific mitigation measures will vary according to a range of factors that cannot be determined at the Draft CWS plan level. In addition, some general 'best-practice' measures may not be appropriate to the qualifying interests of the European sites concerned (for example, clearing vegetation in winter is usually proposed to avoid impacts on nesting birds; however, this is unlikely to be necessary to avoid effects on some SPA species (such as overwintering estuarine birds) and the removal of vegetation in winter might actually have a negative effect on these species through disturbance). However, the following general measures will be followed to minimise the potential for impacts on qualifying interest species 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 and 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.
- **Scheme Design:** Will aim to minimise the environmental effects by 'designing to avoid' potential impacts.
- **Habitat Loss and Supporting Habitats Loss:** Pipelines are usually (where practical) constructed within existing public roads, therefore limiting or avoiding the potential for habitat loss within European sites. Where possible all new infrastructure such as WwTPs will be cited outside of European sites. Where European sites cannot be avoided altogether, detailed surveys of habitats within the affected area will be undertaken to locate and avoid sensitive habitats to ensure there is no loss of qualifying interest Annex I habitats or Annex II species. Similarly, any upgrade of existing infrastructure within or adjacent to European sites will aim to avoid impacts on these species or habitats through appropriate scheme design.
    - Habitat features that may be used by qualifying interest species (supporting habitat) when outside the European site boundary will be avoided through project specific studies and appropriate scheme design. Surveys focusing on mobile qualifying interest species will ensure any significant areas of supporting habitat (for example, foraging or roosting areas for qualifying interest birds very near but outside of an SPA, otter holts outside an SAC boundary) will be identified and avoided or appropriate mitigation measures put in place to protect them.
- **Invasive Species:** There is the potential for both terrestrial and aquatic invasive alien species to be present across the country. If present, these could potentially be spread to habitats within SACs/SPAs during construction/decommissioning works and operation (for example, maintenance works to WwTPs and pipelines). The introduction of invasive species into a European site can affect the conservation objectives for qualifying interest habitats or species, potentially adversely affecting the integrity of the

European site (for example, affecting vegetation composition of an Annex I qualifying interest habitat, affecting species distribution and abundance and/or out-competing native species). Invasive species surveys (for species listed on Schedule 3 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)), including American skunk-cabbage, in addition to species of concern specific to a particular European site/habitat (such as common cord-grass) will be undertaken for any future projects that may arise from the Draft CWS. If invasive species are found to be present, an Invasive Species Management Plan will be prepared to outline the control and or removal measures. These measures will ensure such species are not spread during construction or operation of any future projects that may arise from option types outlined within the Draft CWS. All works relating to invasive species will be implemented in line with relevant national guidelines as well as those relevant guidelines produced by Irish Water including:

  - Biosecurity protocols in relation to water quality and biological sampling.
  - Invasive Species Management Guidelines for Japanese knotweed, Himalayan balsam and giant hogweed.

- **Pre-construction Surveys/Seasonal Restrictions/Ecological Clerk of Works:** To ensure appropriate protection of qualifying interest habitats and species, 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 areas will 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 the affected European Site.

7.2 Recommended Approaches Specific Mitigation Measures

Whilst the general principles and approaches described above in Section 6.4.1 are applicable to all the Recommended Approaches as they are progressed through project-level development, certain Recommended Approaches or aspects of them will require to have these mitigation measures drawn attention to, to ensure that there are no adverse effects on the integrity of any European site.

These mitigation measures have been identified for six aspects of the CWA across five sub-catchments and are designed to:

- Minimise permanent and/or temporary habitat loss of European sites.
- Minimise loss or degradation of ecologically important areas through detailed species and/or habitat assessments.
- Minimise species disturbance via seasonal restrictions on construction works (i.e. avoidance of over-wintering period).

It should be noted that areas within Cork Harbour may be important for cormorant (qualifying interest of the Sovereign Islands SPA) for foraging during the breeding season and avoiding the over-wintering period may bring the works into conflict with this species. Detailed site assessment of project area in the vicinity of specific works may therefore be required to determine the ecological importance of the areas to this species.

Table 7-1: Key mitigation measures identified for specific sub-catchments

Sub-catchment	Location/Aspect	Mitigation
6 (Ballygarvan, Halfway, and Minane Bridge)	Untreated WW pipeline to Carrigaline pumping station	Project-level design to maximise distance between pipeline and European site.
7 (Ballincollig & Killumney)	Untreated WW pipeline to Cork Lower Harbour	Project-level design to maximise distance between pipeline and European site(s).

Sub-catchment	Location/Aspect	Mitigation
9 (Carrigtwohill and Midleton)	Upgrade and replacement of Carrigtwohill WwTP	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 outside the SPA/SAC site boundary
9 (Carrigtwohill and Midleton)	Extension of Carrigtwohill outfall and discharge point down the Slatty Water	Detailed site assessment of project area to determine ecological importance to SPA/SAC habitats and species including potential areas of saltmarsh habitat, and identify areas of invasive alien species. Project-level design to microsite new infrastructure to locations outside any newly identified areas of saltmarsh and ensure no surface structures which would cause physical obstruction to normal sediment/tidal flows. Undertake construction works outside the overwintering period for qualifying interests subject to project-level assessments. Biosecurity management plan to control risk of common cord-grass colonisation.
10 (Ballymore, Cloyne, Saleen, North Cobh and Whitegate-Aghada)	Untreated WW pipeline to Rostellan and discharge point tie-in	Project-level design to maximise distance between pipeline and European site. Detailed site assessment of project area to determine ecological importance to SPA species. Undertake construction works outside the overwintering period for qualifying interests subject to project-level assessments.

8 In-combination Effects

Under Article 6(3) of the Habitats Directive, an assessment of in-combination effects with other plans and projects is required. The assessment encompasses projects or plans that have been completed, approved but not completed or proposed (but not yet approved). The assessment used the best available information at the time of writing. Effects can include, but are not limited to, multiple effects of the same or similar type from a number of developments on the same receptor/resource.

In line with the relevant guidance (European Commission, 2000b), considering of in-combination effects was undertaken using a stepwise approach, as follows:

- Identify plans/projects that might act in-combination.
- Identify the types of LSEs that might occur.
- Define boundaries of the assessment.
- Identify pathways for effects.
- Prediction and assessment.

Given the strategic nature of a plan such as the Draft CWS, the assessment of in-combination effects focused on the key high-level plans as listed below. Plans were identified at the AA screening stage and include the following:

- Water Services Strategic Plan 2050 (Uisce Éireann, 2025).
- National Wastewater Sludge Management Plan (Uisce Éireann, 2016a).
- Lead in Drinking Water Mitigation Plan (Uisce Éireann, 2016b).
- National Water Resources Plan 2021 and Regional Water Resources Plan – South West (Uisce Éireann, 2023).
- Uisce Éireann Biodiversity Action Plan (Uisce Éireann, 2021).
- National Planning Framework. Ireland 2040 Our Plan (DHPLG, 2018a).
- National Development Plan Review 2025.
- National Adaptation Framework First Revision (DCCAE, 2018).
- National Marine Planning Framework (NMPF) (DHPLG, 2021).
- Southern Regional Spatial and Economic Strategy (Southern Regional Assembly, 2020).
- Water Action Plan 2024: A River Basin Management Plan for Ireland 2022-2027) (DHLGH, 2024).
- Catchment Flood Risk Assessment and Management (CFRAM) Programme (Office of Public Works (OPW), 2018).
- Water Quality and Water Services Infrastructure, Climate Change Sectoral Adaptation Plan (DHPLG, 2019).
- Climate Action Plan 2025 (DECC, 2025).
- National Biodiversity Action Plan 2017-2021 (DCHG, 2021)/Draft Ireland's 4th Biodiversity Action Plan 2023-2027 (DHLGH, 2022).
- Cork City Development Plan 2022-2028 (Cork City Council, 2022).
- Cork County Development Plan 2022-2028 (Cork County Council, 2022).
- Cork City Heritage and Biodiversity Plan 2021-2026 (Cork City Council, 2021).
- Draft Cork City Climate Action Plan 2024-2029 (Cork City Council, 2023).
- Draft Cork County Council Climate Action Plan 2024-2029 (Cork County Council, 2023).

Given the strategic nature of many of the plans, and that many did not contain any geographic specificity for the implementation of the proposals contained therein, it was concluded that there would be no in-combination effects. Furthermore, the plans assessed generally had an overarching mitigation measure that required that all subsidiary plans and projects would be subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate.

Table 8-1: Summary of in-combination assessment with other plans

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
Water Services Strategic Plan 2050 (WSSP)[13] The WSSP is the highest tier Uisce Éireann asset management plan. It sets out Uisce Éireann's objectives for the next 25 years and the means by which they will be achieved. It will focus on the provision of safe drinking water and ensure that the environment is protected from the impacts of wastewater discharges.	• Habitat loss and disturbance from new/upgraded infrastructure • Species disturbance/ mortality • Changes to water quality or quantity	Y	A screening for AA[14] was undertaken for the WSSP which concluded that there was potential for significant effects on European sites from the implementation of the plan. The WSSP is the highest tier (Tier 1) Uisce Éireann asset management plan. The WSSP is a high-level plan with no location-specific information. The AA screening for both the WSSP and the Draft CWS identify potential LSEs from impacts of a similar nature, and therefore a potential for in-combination effects was identified. The NIS for the WSSP highlighted the need for additional plan/project environmental assessments to be carried out at the Tier 2 and Tier 3 level. Page xii of the WSSP sets out a summary of the strategic objectives and aims of the plan. In particular, Chapter 6 presents overarching strategies (EN1 to EN3) that aim to protect and enhance the environment. Strategy EN2 is of particular relevance: "*Operate our water services infrastructure in a manner that supports the achievement of water body objectives under the Water Framework Directive and our obligations under the Birds and Habitats Directives*"..."*projects are designed and developed in accordance with statutory planning processes and environmental regulations from the outset. We will comply with the statutory processes relevant to our programmes and projects, including Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) under the Habitats Directive, ensuring the avoidance of potential significant adverse effects on biodiversity (including protected sites), human health, water, air quality, cultural heritage (including archaeology), soil and landscape and visual amenity as a result of the upgrade to/construction of new infrastructure, including potential transboundary effects*". The NIS for the Draft CWS has highlighted the need for additional project level environmental assessments, while high-level mitigation measures have been outlined in Chapter 6 of this NIS. Mitigation required will be developed and delivered as options are advanced which will protect European sites within the SE region from in-combination effects that could lead to AESI. Given the overarching strategies and objectives within the WSSP to protect the environment, and with the implementation of mitigation measures, including project level AA, no AESI in light of European sites' conservation objectives are predicted as a result of in-combination effects.	N
National Wastewater Sludge Management Plan (NWSMP)[15] The NWSMP is a Tier 2 plan which sets out the long-term, 25 year, strategy for the management of wastewater sludge produced at Waste WTPs under the control of Uisce Éireann. This is currently the most recent NWSMP.	• Habitat loss and disturbance from new/upgraded infrastructure • Changes in water quality (increased phosphorous in receiving waters) • Loss of or disturbance to habitats or species or their supporting features, for example water quality through inappropriate siting of new infrastructure.	Y	The AA screening for the NWSMP concluded that the NWSMP could lead to significant effects on European sites. This is a high level (Tier 2) plan with no location-specific information. However, the AA screenings for both the NWSMP and the Draft CWS identify potential LSEs from impacts of a similar nature, and therefore a potential for in-combination effects has been identified. For example, siting of new wastewater sludge infrastructure has the potential to impact the same receptors as new infrastructure under the Draft CWS. A number of mitigation measures have been outlined in Table 6-1 of the NIS for the NWSMP which includes a number of policies, actions and research initiatives which all aim to protect the environment, including European sites. Given the mitigation measures set out in the NIS for the NWSMP and the mitigation measures in Section 7 of this NIS, and with the requirement for project level assessments for any project arising from the plans, no AESI in light of a European site's conservation objectives are predicted as a result of in-combination effects.	N
Lead in Drinking Water Mitigation Plan (LDWMP)[16]	None (AA was not required for catchments in the Cork City area).	N	The NIS took a precautionary approach and assessed the impacts that would be anticipated from the LDWMP, providing the necessary inclusion of mitigation measures and guiding principles at the strategic level of the Plan. The policies and objectives of the LDWMP were devised, as part of an iterative approach, to anticipate and avoid as	N

[13] https://www.water.ie/projects/strategic-plans/water-services-strategic (Accessed July 2025)
[14] https://www.water.ie/sites/default/files/docs/projects/strategic-plans/wssp/what-is-the-wssp/NIS-Appendices-Screening-Report-and-Consultation-Responses.pdf (Accessed July 2025)
[15] https://www.water.ie/projects/strategic-plans/national-wastewater-sludg (Accessed July 2025)
[16] https://www.water.ie/projects/strategic-plans/lead-mitigation-plan (Accessed July 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
The Plan provides a detailed framework of measures to effectively address lead in drinking water			appropriate measures that would likely have a significant adverse effect upon the integrity of European Sites. In addition, planned corrective water treatment proposals arising from the implementation of the LDWMP will themselves be subject to Appropriate Assessment legislation when details of location and proposed rates are devised by Uisce Éireann. The AA determined that there would not be any significant direct, indirect or cumulative impacts which would have the potential to adversely affect the qualifying interests/special conservation interests of any European sites within the study area with regard to their conservation objectives. Furthermore, individual AA screening reports for catchments in the Cork City area concluded that AA was not required.	
Regional Water Resources Plan - South West (RWRP-SW)[17] The development of the RWRP-SW allows Uisce Éireann to review water supply needs collectively for the entire South West region and across the spectrum of risk including quality, quantity, reliability, and sustainability.	• Habitat loss/degradation • Mortality • Water quality/availability • Disturbance	Y	An AA screening was conducted on the RWRP-SW. The conclusion of that screening was that it could not be excluded on the basis of objective scientific information that the RWRP-SW, individually or in-combination with other plans or projects, would have a significant effect on a European site or European sites. This conclusion was reached given the strategic nature of the RWRP-SW and in light of a number of uncertainties relating to the implementation of the RWRP-SW going forward. All European sites within and with effect pathways from the South West region were initially considered to be potentially within the ZoI of the RWRP-SW as any Preferred Approach option type could be applied in any of the Study Areas of the region. Transboundary impacts to SACs and SPAs in Northern Ireland were also considered of which there are no effects. Positive implications for the environment were also identified. Mitigation required that all options taken forward will be subject to project-level environmental assessment as and when they are implemented, which will include assessments of their potential to affect European sites during their construction and/or operation. The AA found that with mitigation measures, there would be no in-combination effects with any other plan and therefore no adverse effects on any European site's integrity were possible. Given the mitigation measures set out in the NIS for the RWRP-SW and the mitigation measures in Section 7 of this NIS, and with the requirement for project level assessments for any project arising from both plans, no AESI in light of a European site's conservation objectives are predicted as a result of in-combination effects.	N
Biodiversity Action Plan 2021[18] Uisce Éireann developed the plan to help conserve, enhance and work with the natural environment.	None identified	N	The details specific objectives and actions to address the biodiversity including issuing all Uisce Éireann sites with a clear set of measures that will enhance and protect biodiversity and ensuring 'no net loss' of biodiversity when carrying out activities, or delivering plans or projects. There is also a specific objective to manage invasive alien species at Uisce Éireann sites. The biodiversity action plan also requires that all Uisce Éireann plans, projects and activities will comply with the Habitats and Birds Directives, and their implementing regulations, and be subject to appropriate assessment screening. Given that the biodiversity action plan includes objectives and actions seeking to ensure the protection of European sites and that that AA will be undertaken on plans/projects where required in-combination effects are not predicted.	N
Ireland's 4th National Biodiversity Action Plan 2023–2030[19] NPWS (2024) The plan sets the national biodiversity agenda for the period 2023-2030 and aims to deliver the transformative changes required to the ways in which Ireland values and protects nature.	None identified	N	The NBAP states that: "*The NBAP works on the principle that existing regulations associated with EU Directives relating to the protection of biodiversity will be implemented. This includes Article 6 of the Habitats Directive (92/43/EEC) which obliges member states to undertake an 'appropriate assessment' (AA) for any plan or project which may have a likely significant effect on any European Site*." In addition, the plan states that in support of Outcome 2D: Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored the plan states that "*Uisce Éireann will implement its Water Services Strategic Plan (2015-2040), in particular its objective to protect and enhance the environment, together with its Biodiversity Action Plan*". Furthermore, the Wildlife (Amendment) Act 2023 introduced a new public sector duty on biodiversity. The legislation provides that every public body, as listed in the Act, is obliged to have regard to the objectives and targets in the National Biodiversity Action Plan.	N

[17] https://www.water.ie/projects/strategic-plans/national-water-resources/rwrp/south-west (Accessed July 2025)
[18] https://www.water.ie/projects/strategic-plans/biodiversity-action-plan (Accessed July 2025)
[19] https://www.npws.ie/legislation/national-biodiversity-action-plan (Accessed July 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
Project Ireland 2040 **National Planning Framework[20], Project Ireland 2040** **National Development Plan 2021-2030[21],** **National Development Plan Review 2025[22]** Project Ireland 2040 is the government's long-term overarching strategy to make Ireland a better country for all and to build a more resilient and sustainable future. The National Planning Framework (NPF) and the National Development Plan (NDP) 2021-2030 combine to form Project Ireland 2040. The NPF is the Government's high-level strategic plan for shaping the future growth and development of Ireland out to the year 2040.	None identified	Y	The NPF and NDP together create a unified and coherent plan, the NPF setting the overarching spatial strategy for the next 20 years and the NDP setting out the 10-year investment strategy. The NDP, as a budget and financial plan, is not part of the physical planning process. Projects funded under the NDP will be subject to planning law and may require SEA and AA as appropriate. However, these requirements do not arise in relation to the NDP itself. A draft (pre-consultation) NIS was prepared having concluded that the NPF should be subject to AA. The pre-consultation NIS concluded that, subject to the mitigation proposed being incorporated into the NPF, there would be no adverse effects on the integrity of any European sites. Following statutory consultation, modifications and amendments were made to the draft NPF and these were assessed in a new version of the NIS. This concluded that the NPF would not have any adverse effects on site integrity. The NPF is a strategic and high-level policy framework, to inform the preparation of subsidiary strategies (lower tier plans), such as Regional Spatial and Economic Strategies and other statutory land-use plans such as city and county development plans and local area plans. The NPF does not determine the precise location of any development project or designate or allocate specific land uses, nor does it preclude the consideration of alternatives. Lower tier plans and their detailed objectives and policies will themselves be subject to appropriate assessment and will therefore be fully considered at that time. All subsidiary actions and policy preparation informed by the NPF shall be required to conform to the relevant regulatory provisions aimed at preventing pollution or other environmental effects likely to adversely affect the integrity of European sites. For this reason, in considering whether the NPF will adversely affect the integrity of any European site, it has been recognised that the NPF does not, in and of itself, give direct effect to any specific projects nor does it authorise specific individual projects which might adversely affect the integrity of any European site. A precautionary approach was applied in preparation of the NPF in order to ensure that lower tier plans and strategies do not themselves give rise to effects on the integrity of European sites, by explicitly including a number of safeguards. The first of these safeguards (National Policy Objective (NPO) 59) states: Enhance the conservation status and improve the management of protected areas and protected species by: • Implementing relevant EU Directives to protect Ireland's environment and wildlife; • Integrating policies and objectives for the protection and restoration of biodiversity in statutory development plans; • Developing and utilising licensing and consent systems to facilitate sustainable activities within Natura 2000 sites; • Continued research, survey programmes and monitoring of habitats and species. The second (NPO 75) states: Ensure that all plans, projects and activities requiring consent arising from the NPF are subject to the relevant environmental assessment requirements including SEA, EIA and AA as appropriate. Given these requirements in-combination effects are not predicted.	N
National Adaptation Framework, Planning for a Climate Resilient Ireland[23]	None identified	N	The NAF was pre-screened for a requirement for AA and it was concluded that an AA was not required. As an assessment under the Habitats Regulations was not required there can be possibility of in-combination effects as the NAF would not lead to any effects on European sites. No in-combination effect; an AA was not required.	N

[20] https://www.gov.ie/en/department-of-housing-local-government-and-heritage/publications/project-ireland-2040-national-planning-framework/ (Accessed July 2025)
[21] https://www.gov.ie/en/department-of-public-expenditure-infrastructure-public-service-reform-and-digitalisation/press-releases/government-launches-the-renewed-national-development-plan-2021-2030/ (July 2025)
[22] https://assets.gov.ie/static/documents/NDP_Review_document_-_22_July_2025_1025.pdf (Accessed July 2025)
[23] https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/national-adaptation-framework-naf/ (Accessed July 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
In accordance with the 2015 Act, the National Adaptation Framework (NAF) specifies the national strategy for the application of adaptation measures in different sectors and by local authorities in their administrative areas in order to reduce the vulnerability of the State to the negative effects of climate change and to avail of any positive effects that may occur.				
National Marine Planning Framework[24] The National Marine Planning Framework (NMPF) brings together all marine-based human activities, outlining the government's vision, objectives and marine planning policies for each marine activity. The NMPF details how these marine activities will interact with each other in an ocean space that is under increasing spatial pressure, ensuring the sustainable use of our marine resources to 2040.	• Habitat loss or destruction • Loss of key supporting habitats and ecosystem complexes • Habitat fragmentation or degradation • Disturbance to habitats/ species • Species mortality • Alterations to water quality and/or water movement • Alterations to air quality • Alternations due to climate change • Introduction or spread of invasive species	Y	The NMPF NIS study area considered all sites within the NMPF area as well as a 50km marine buffer and a 5km inland buffer. The 50km marine buffer also took into consideration transboundary Natura 2000 sites within other jurisdictions. Additional consideration was taken for specific species/species groups including otters, anadromous fish and pelagic seabirds. In considering the potential for adverse effects, the NIS noted that the NMPF is a strategic and high-level policy framework, to inform the preparation of subsequent strategies. Furthermore, it was noted that the lower tier strategies and plans would themselves be subject to appropriate assessment as necessary. The NIS determined that the plan would have no adverse effects on site integrity with mitigation in place. This mitigation included requirements to do AA Screening/AA where appropriate, as well as good practice approaches to environmental protection. These policies/approaches addressed the need to better integrate biodiversity protection and management of protected habitats and species into marine planning. They also set the scene for a cascading hierarchy of protection by explicitly ensuring that all plans, projects and activities informed by the NMPF must take account of the wider biodiversity agenda. The framework was subject to AA and potential effects were identified. Overarching mitigation measures/policies were identified to be included with the framework. Given the nature of the framework, and the implementation of the overarching mitigation measures, no in-combination effects are predicted.	N
Water Action Plan 2024: River Basin Management Plan for Ireland 2022 – 2027[25] The RBMP 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	• Habitat loss and destruction • Habitat degradation • Habitat rehabilitation/ enhancement • Habitat/species fragmentation • Disturbance to key species	Y	The RBMP includes Sectoral Action Work Plans and 46 Catchment Management Plans (sub plans of the RBMP, yet to be developed) and was published in September 2024. The NIS noted that the draft RBMP is a strategic plan which sets the framework for and relies to a significant degree on programme and project initiatives to deliver measures on the ground. Furthermore, it was noted that many of these measures have already undergone AA or will undergo AA with the development of specific measures. Those measures committed to in these and other plans would be essential to ensuring that the objectives of the RBMP are met and that the RBMP does not have adverse effects on the integrity of any European site. In addition, overarching mitigation measures were also proposed. The RBMP includes a commitment to the Blue Dot Programme. The *draft* RBMP was subject to AA and potential effects were identified. Overarching mitigation measures were identified to be included with the plan. These included the requirement that all proposals arising from the RBMP	N

[24] https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/national-marine-planning-framework/ (Accessed July 2025)
[25] https://www.gov.ie/en/department-of-housing-local-government-and-heritage/policy-information/river-basin-management-plan-2022-2027/ (Accessed August 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
our natural waters are sustainably managed and that freshwater resources are protected so as to maintain and improve Ireland's water environment.	• Changes to favourable conservation status of key species • Changes in key indicators of conservation value • Climate change		must demonstrate that they can be implemented without adverse effects on the integrity of SACs or SPAs. Furthermore, in relation to urban wastewater, measures required that wastewater infrastructure be planning and/or licensing of discharges and that AA screening/AA would be required to inform decision making and at the project level. Mitigation measures were amended as necessary after consultation for the finalised RBMP and associated NIS, as well as noting that measures were already committed to. Given the nature of the plan, and the implementation of the various mitigation measures, no in-combination effects are predicted.	
Climate Action Plan 2025[26] The Climate Action Plan 2025 (CAP25) is the third CAP to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021. CAP25 builds upon previous plans by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings and it should be read in conjunction with Climate Action Plan 2024. The Plan provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and achieve climate neutrality by no later than 2050.	• Habitat loss or fragmentation • Loss of key supporting habitat functions and ecosystem services • Disturbance to habitats/species • Species mortality and injury • Alterations to water quality and/or water movement • Alterations to air quality • Introduction or spread of invasive species	Y	The plan is a roadmap for taking decisive action for meeting Ireland's emissions reduction requirements. The measures and actions included in the CAP25 generally align with those in CAP24. However, there have been refinements, amendments and additions to the action plans in order to support and stimulate climate action progress. An Appropriate Assessment was carried out on CAP24 and as such, with a view to avoiding unnecessary duplication of assessments, an AA Screening was conducted on CAP25 on the differential list of proposed measures and actions in the Plan; only those aspects which have changed were screened to ascertain the likely need for an AA on CAP25. The NIS on CAP24 identified all sites with Ireland and Northern Ireland taking into account transboundary considerations. However, the NIS stated that it was not practical for the report to identify transboundary sites in any detail; AA on lower tier plans and sectoral plans would be in a position to consider transboundary issues in more detail where geographic context can be added. The AA identified CAP24 actions contained within the Plan which could have the potential for adverse effects and identified where mitigation was required. General overarching mitigation was the main measure identified and ongoing/in preparation plans, programmes and projects must be consistently screened for the AA processes as appropriate. Specific mitigation was considered necessary only for one action and this took the form of the provision of guidance. Any mitigation measures identified must also be adhered to as well as existing guidance on avoiding negative environmental effects. Specific recommendations were made for some actions. The CAP provides a roadmap and is therefore a high-level plan. Overarching mitigation measures were identified to be included with the plan. Given the high-level nature of the plan, and the implementation of the overarching mitigation measures, as well as specific recommendations, no in-combination effects are predicted. The AA screening on CAP25 ascertained that an AA on CAP25 could be ruled out. This was partly because "*the differential measures and actions in CAP25 do not include specific details or locations of any of the Natura 2000 sites that could be definitively impacted. This makes it impractical to conduct an AA on said measures as no site can be defined*." Given that no AA was required for CAP25 no in-combination effects are predicted.	N
Southern Regional Spatial and Economic Strategy[27] The Regional Spatial and Economic Strategy for the Southern Region (RSES) – is a 12-year strategic regional development framework to guide change in the Southern Region. It includes the Metropolitan Area Strategic Plans (MASP) for Cork.	• Habitat loss or destruction • Loss of key supporting habitats and ecosystem complexes • Habitat fragmentation or degradation • Disturbance to habitats/species • Species mortality	Y	One of the principal functions of the Southern Region RSES will be to practically support and advance the delivery of the national policy objectives contained in the NPF. The RSES seeks to determine at regional scale how best to achieve the shared goals set out in the National Strategic Outcomes (NSOs) of the NPF. To this end, the draft Strategy sets out 10 Regional Strategic Outcomes (RSOs), which are aligned with the NSOs of the NPF, international, EU and national policy and which in turn set the framework for City and County Development Plans. The RSES does not detail geographic specificity for the implementation of many of the RSES measures. The ZoI of the RSES was therefore considered to include all European Sites within the Southern Region and considers transboundary impacts to SACs and SPAs with direct connectivity e.g. rivers flowing into or out of the Southern Region. The NIS considered Key Policy Areas including one for Wastewater. Mitigation comprised delivery of the services would be subject to appropriate environmental assessment, phasing of services in terms of growth and settlement as essential to avoid adverse impacts, selection of sites to facilitate improvements in wastewater being supported by a robust site selection process, and provision of site selection criteria to assist local authorities in decision making.	N

[26] https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/climate-action-plan-2025/ (Accessed August 2025)
[27] https://southernassembly.ie/resource-publication-category/regional-planning/rses/ (Accessed July 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
	• Alterations to water quality and/or water movement • Alterations to air quality • Alternations due to climate change • Introduction or spread of invasive species		As an overall mitigation strategy, it was noted that actions arising out of the RSES shall be required to conform to the relevant regulatory provisions aimed at preventing pollution or other environmental effects likely to adversely affect the integrity of European Sites, where applicable and appropriate. In addition, all lower level plans and projects arising from the implementation of the RSES will themselves be subject to screening for AA and where relevant, AA. The overarching mitigation strategy was therefore, that potential LSE or AESI would be considered fully at project level during pre-planning design and AA, when the specific effects of a development option can be reduced or eliminated through targeted project-specific surveys and iterative design, in order to limit the potential for LSEs or AESI. Given the high-level nature of the plan, and the implementation of the overarching mitigation strategy no in-combination effects are predicted.	
Catchment-based Flood Risk Assessment and Management (CFRAM) Programme[28] The CFRAM programme was a one-off and is central to the medium and long-term strategy for the reduction and management of flood risk throughout Ireland.	None identified	N	The Office of Public Works undertook the National Catchment-based Flood Risk Assessment and Management (CFRAM) Programme in consultation with the Local Authorities and supported by external engineering consultants to identify and map the existing and potential future flood hazard and flood risk, to identify feasible structural and non-structural measures to effectively manage the assessed risk and to prepare a set of Flood Risk Management Plans, and associated Strategic Environmental and Habitats Directive (Appropriate) Assessments, that set out the proposed feasible measures and actions to manage the flood risk. The programme is an umbrella programme through which plans and projects can be delivered and is not a plan in of itself. Whilst it is conceivable that effects may occur as a result of various plans (such as River Basin Management Plans and Flood Risk Management Plans), the programme in of itself will not have any effects. There is therefore no potential for in-combination effects.	N
Water Quality and Water Services Infrastructure, Climate Change Sectoral Adaptation Plan[29] This adaptation plan is focused on managing the risks from climate change for water quality and for water services infrastructure and describes the key risks and proposes necessary adaptive measures.	None identified	N	The plan details the priority concerns for the water quality and water services infrastructure sectors, clearly presenting the linkages between climate change hazards and associated risks to sub-sectors, beginning the process of identifying sectoral priorities which will be developed following the study. A clear analysis of Strategic Environmental Assessment (SEA) and Appropriate Assessment considerations at this stage of the sectoral adaptation planning process was included. Screening for AA was undertaken at an early stage to ensure the plan complied with the requirements of the Birds and Habitats Directives. Following the screening undertaken for Appropriate Assessment, the DHPLG determined that due to the nature of this plan, and the implementation of potential adaptive measures through existing or planned plans or programmes, a full SEA and Appropriate Assessment was not required. As an AA was nor required there is no potential for in-combination effects.	N
Cork county Development Plan 2022-2028[30] The County Development Plan guides future growth and development in the County.	• Direct effects • Indirect effects on habitat quality • Disturbance to species • Reduction in QI species richness/diversity	Y	The Cork County Development Plan sets out the policy objectives and the overall strategy for the proper planning and sustainable development of the County over the plan period from 2022 to 2028. The plan also sets out the overall planning and sustainable development strategy for the county which must be consistent with the National Planning Framework 2018 and the Southern Region Regional Spatial and Economic Strategy and Cork Metropolitan Area Strategic Plan (MASP) 2020. The County Development Plan covers Cork County excluding the administrative area of the City. Sixty-three European sites were included in the screening for AA. AA was required for many of these including most sites identified in this NIS. Recommendations were made for amendments to the plan to strengthen protection for EU sites. One was a new overarching objective: *To sustainably manage future development within this planning area,*	N

[28] https://www.gov.ie/en/office-of-public-works/policy-information/cfram-programme/ (Accessed July 2025)
[29] https://www.gov.ie/en/department-of-housing-local-government-and-heritage/publications/water-quality-and-water-services-infrastructure-climate-change-sectoral-adaptation-plan/ (Accessed July 2025)
[30] https://www.corkcoco.ie/en/resident/planning-and-development/cork-county-development-plan-2022-2028 (Accessed July 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
	• Changes of indicators of conservation values		*taking account of its environmental, ecological, heritage and landscape values, particularly within the Cork Harbour area*. AA was subsequently undertaken in amendments to the plan. The determination concluded that all risks to European sites had been addressed because: priority has been given to the avoidance of effects in the first place, that is, no policies promote inappropriate development within EU sites; the plan includes strong environmental protection policies which will contribute to the protection of EU designated sites, water quality, biodiversity outside EU designated sites and green infrastructure resources; and in accordance with policy set out in the plan, development proposals and projects arising through the implementation of the plan will themselves be subject to relevant stages of Appropriate Assessment when further details of design and location are known. Such projects will only be permitted where it can be demonstrated that such proposals are compatible with Article 6 of the Habitats Directive, Part XAB of the Planning and Development Act and/or Part 5 of the Birds and Natural Habitats Regulations. Given the nature of the plan, and the implementation of the mitigation measures, including the need for proposals and developments arising from the plan being required to under AA as appropriate, no in-combination effects are predicted.	
Cork County Council Climate Action Plan 2024-2029[31] Local authorities are required to produce a Local Authority Climate Action Plan (LACAP) to meet national emission reductions targets and develop resilience to the impacts of climate change.	• Loss/reduction of habitat area • Habitat or species fragmentation • Disturbance to key species • Reduction in species density • Changes of indicators of conservation values • Climate change	Y	Cork County Council adopted their Climate Action Plan 2024-2029 on Monday 12th February 2024. It is aligned with the Government's national climate objectives and targets, which seek to transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy by 2050. The NIS identified 67 sites for inclusion in the assessment. Mitigation measures were proposed that maximized the co-benefits of climate action for other environmental components such local air quality, human health, biodiversity, water quality and other interrelated areas. In addition, additional text clarifying environmental protection related obligations and environmental enhancement opportunities was attached to a variety of defined actions in the plan. This text was shaped to ensure that environmental considerations are appropriately taken into account during plan implementation. All Plan modifications were subsequently screened for AA. It was further required that all lower-level plans and projects arising through the implementation of the LACAP will themselves be subject to AA when further details of design and location are known. Given the nature of the plan, and the implementation of the mitigation measures, including the need for proposals and developments arising from the plan being required to under AA as appropriate, no in-combination effects are predicted.	N
Cork City Development Plan 2022-2028[32] The Cork City Development Plan 2022-2028 sets out how the city will grow and develop over that period, while complementing a longer 2040 vision.	• Loss/reduction of habitat area • Habitat or species fragmentation • Disturbance to key species • Reduction in species density • Changes of indicators of conservation values • Climate change	Y	The Cork City Development Plan 2022-2028 sets out how Cork City can best enable growth and investment over the six year period, while continuing to be an innovative, vibrant, healthy and resilient city. The plan was adopted by resolution of the Council on the 10 June 2022 and takes effect on 8 August 2022. Details of European Sites that occur within 15km of and/downstream of the City were included within a ZoI although sites beyond 15km were also considered in the AA. Three sites were included in the screening for AA: Cork Harbour SPA, Great Island Channel SAC and Blackwater River (Cork/Waterford) SAC. Only the first two sites were assessed at the AA stage. Mitigation measures were identified that would prioritise the avoidance of effects in the first place and mitigate effects where these cannot be avoided. In addition, all lower-level plans and projects arising through the implementation of the Plan would themselves be subject to AA/screening for AA when further details of design and location are known. Mitigation in relation to the 'Water services and quality' component of the Development Plan included to work with Uisce Éireann to identify and facilitate the timely delivery of water and wastewater projects in order to facilitate development in accordance with the Core Strategy, and to support Uisce Éireann in the promotion of effective management of trade discharges to sewers in order to maximise the capacity of existing sewer networks and minimise detrimental impacts on sewage treatment works.	N

[31] https://www.corkcoco.ie/en/resident/environment/climate-action-plan (Accessed July 2025)
[32] https://www.corkcity.ie/en/cork-city-development-plan/ (Accessed July 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
			Given the nature of the plan, and the implementation of the mitigation measures, including the need to work with and support Uisce Éireann, no in-combination effects are predicted.	
Cork City Climate Action Plan[33] The plan aims to accelerate Cork's journey towards a climate-neutral, thriving and resilient city.	• Loss/reduction of habitat area • Habitat or species fragmentation • Disturbance to key species • Reduction in species density • Changes of indicators of conservation values • Climate change	Y	The Cork City Climate Action Plan sets out 129 actions that Cork City Council will initiate in order to reduce emissions from its own buildings and operations. To achieve this vision, there are three goals, To achieve net-zero GHG emissions as soon as possible, to protect and enhance the natural and built environment for future generations and to establish best-practice governance to lead the city. Mitigation measures were suggested that maximize the co-benefits of climate action for other environmental components such local air quality, human health, biodiversity, water quality and other interrelated areas. Additional text clarifying environmental protection related obligations and environmental enhancement opportunities was also attached to a variety of defined actions in the plan. Several environmental governance principles were established to ensure plan implementation generates the minimum level of negative environmental effects and the maximum level of positive environmental effects. These environmental governance principles should underpin and guide plan implementation and should apply to and be integrated into all actions/activities which result due to the implementation of the plan. It was concluded that the risks to the safeguarding and integrity of the qualifying interests, special conservation interests and conservation objectives of the European sites were addressed by the inclusion of these mitigation measures. In addition, all lower-level plans and projects arising through the implementation of the Climate Action Plan will themselves be subject to AA when further details of design and location are known. Given the nature of the plan, and the implementation of the mitigation measures, including the need for proposals and developments arising from the plan being required to under AA as appropriate, no in-combination effects are predicted.	N
Cork City Heritage and Biodiversity Action Plan 2021-2026[34] 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 the city's heritage at the heart of the community.	None identified	N	The Cork City Heritage and Biodiversity Plan (2021-2026) is an action plan and sets out a series of realistic and practical actions to protect conserve and manage the city's heritage over the next five years and a methodology on the implementation of these actions. The Cork City Heritage and Biodiversity Plan includes actions on Archaeology, Built, Cultural and Natural Heritage, so is a combination Heritage and Biodiversity Plan. Objectives include "*Identify buffer areas around the designated European sites within Cork City Council area and work with NPWS to protect and enhance these areas*." An NIS-AA is not available for this Plan. As a result an in-combination assessment cannot be undertaken. However, a key part of the plan is to encourage biodiversity conservation and management and work with NPWS to protect and enhance areas around European sites. It is therefore considered that the protection of European sites is at the fore of the Plan and, as a result, it is unlikely that there would be any in-combination effects.	N
Cork County Local Economic and Community Plan 2024-2030[35] The Local Economic and Community Plan seeks to support and promote a vibrant economy where enterprise can thrive through embracing technological	• Loss/reduction of habitat area • Habitat or species fragmentation • Disturbance to key species • Reduction in species density • Changes in key indicators of conservation value • Climate change		A Screening for Appropriate Assessment was undertaken. The screening stated that the Plan does not introduce any additional sources for effects that were not already considered by the existing planning framework and associated AA processes, and that "*The risks to the safeguarding and integrity of the qualifying interests, special conservation interests and conservation objectives of the European sites have been addressed through the existing planning framework (which has been subject to Appropriate Assessment processes) with which the Plan and all lower tier plans/projects must comply. In addition, any future projects, plans etc. that may arise will themselves be subject to AA/screening for AA when further details of design and location are known*." As a result it was concluded that the Plan to be adopted would not be likely to result in significant effects on European sites and would not give rise to any effects on the ecological integrity of any European Site, alone or in combination with any other plans, programmes and projects. Therefore a NIS-AA was not required. Given that an NIS-AA was not required no in-combination effects are predicted.	N

[33] https://www.corkcity.ie/en/climate-action/cork-city-climate-action-plan/ (Accessed July 2025)
[34] https://www.corkcity.ie/en/council-services/services/arts-culture-heritage/heritage/heritage-plan/ (Accessed July 2025)
[35] https://www.corkcoco.ie/en/resident/community/local-economic-and-community-plan-lecp-2024-2030 (Accessed August 2025)

Plan	Potential impact types common to Draft CWS and other plans	In-combination Likely Significant Effects? (Y/N)	Potential for in-combination effects and mitigation	In-combination adverse effects on site integrity? (Y/N)
advancements and fostering innovation, while being responsible stewards of the environment, and creating socially inclusive communities which are not just sustainable and empowered, but resilient in the face of challenges and where the health and well-being of the citizens is at the forefront.				
Cork City's Local Economic and Community Plan (LECP) 2024-2029[36] Cork City Council adopted the new LECP 2024-2029 on the 13th May 2024. This six-year plan will guide the local community and economic development of Cork City up to 2030. The aim of the LECP is to improve the quality of life for all those who live, work, study in, or visit Cork City.	None identified	N	An AA screening was undertaken on the LECP which concluded that the Draft Socio-Economic Statement and High Level Goals would not give rise to significant effects on the integrity of any Natura 2000 sites, and that therefore no further assessment was required. The AA Screening concluded that following detailed review and assessment it was considered that the draft Cork City LECP would not result in likely significant effects to European Sites. Given that the no further assessment was required after AA screening no in-combination effects are predicted.	N

[36] https://www.corkcity.ie/en/council-services/services/community/local-economic-community-plan/lecp-2024-2029/ (Accessed August 2025)

9 Conclusion

The conclusion of the NIS for the Draft CWS is that, based on a plan-level assessment, 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 Approach options within the Draft CWS.

As stated in Section 1.3 any projects that are progressed following the Draft CWS will require individual environmental assessments, including, where appropriate, Environmental Impact Assessment and Appropriate Assessment, in support of planning applications (where a project requires planning permission) or in support of licensing applications (for example, wastewater discharge authorisations). Any such applications will also be subject to public consultation.

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.

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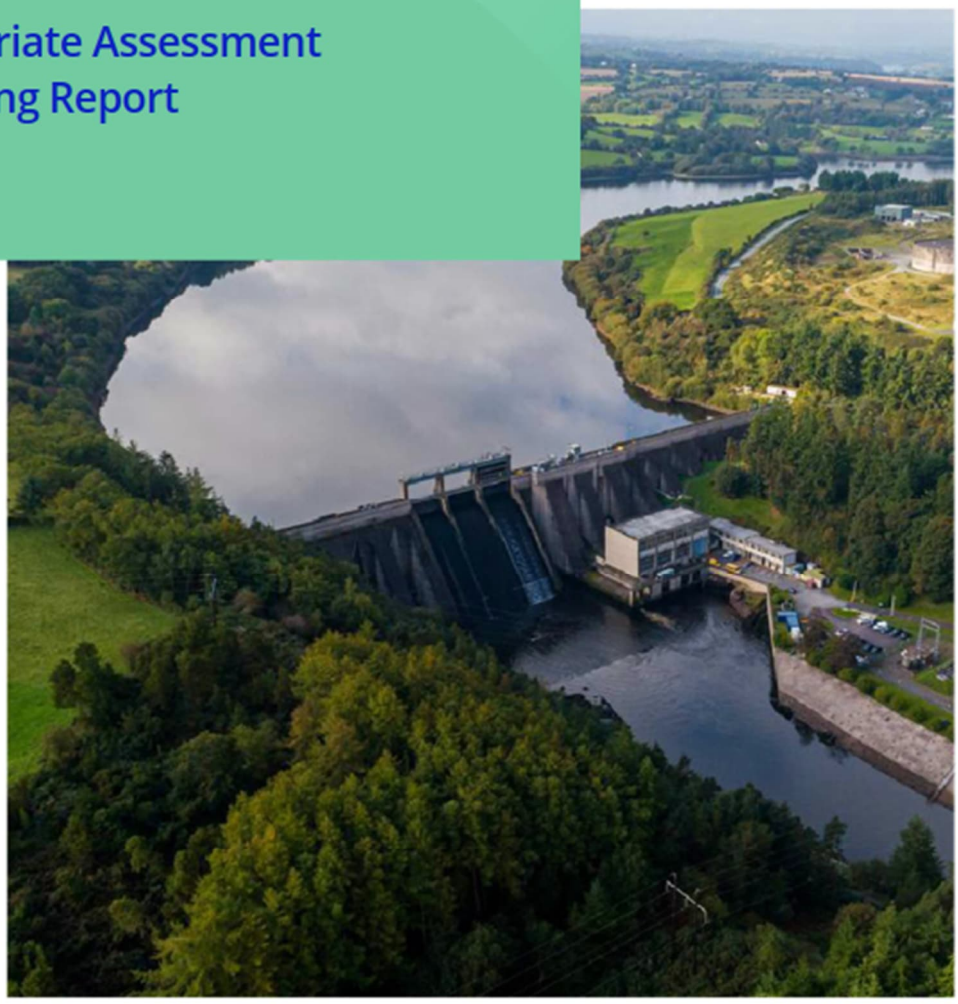
Appendix A AA Screening Report

Spring 2024

Uisce Éireann
Irish Water

Draft Cork Wastewater Strategy

Appropriate Assessment Screening Report



Safeguarding our water for our future

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1 Introduction and Background

Introduction

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.

Uisce Éireann have identified the need for a strategic approach for the assessment of wastewater treatment and network infrastructure for the Cork Metropolitan Area (CMA). The CMA is a major regional metropolitan area, identified as such in the National Planning Framework (NPF) (DHPLG, 2018a) and in the Regional Spatial and Economic Strategy (RSES) 2020-2032 (Southern Regional Assembly, 2020) 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. This projected population and associated economic growth will result in a significant increase in water supply and as a result demands on the existing wastewater infrastructure within the area which is now being challenged to keep pace with this growth and an increased demand for new serviced lands.

Uisce Éireann have identified the need for a wastewater strategy for the CMA based on the increase in population identified above, current compliance challenges at a number of wastewater treatment plants and sewerage networks, wastewater treatment capacity requirements to deal with current and future loads from the CMA and associated pressures on the receiving waters from wastewater discharges within the CMA. Particular challenges facing the CMA can be summarised as:

- Impact on wastewater systems as a result of rapid growth;
- Non-compliance challenges associated with existing Wastewater Treatment Plants (WwTP) and sewerage networks;
- Pressure on installed wastewater treatment capacity;
- Deterioration of receiving waters;
- Impact of new Urban Wastewater Treatment Directive (UWTD) on existing wastewater systems; and
- Climate change.

The delivery of a sustainable, integrated wastewater strategy for the CMA requires a strategic approach to wastewater infrastructure planning which incorporates needs of stakeholders, supports economic growth, allows for climate change and meets the demand of a growing population. A sustainable wastewater strategy must be consistent with statutory obligations and regulatory drivers designed to meet both national and international environmental objectives e.g., Water Framework Directive (WFD) and Urban Wastewater Treatment Directives (UWWTD), and those intended to address the impacts of climate change.

The Cork Wastewater Strategy (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 Appropriate Assessment (AA) Screening Report is required under the Habitats and Birds Directives and was prepared in alignment with the accompanying Strategic Environmental Assessment (SEA) Scoping Report.

Aim of this Report

Habitats and species of European importance are provided legal protection under the EU Habitats Directive 92/43/EEC (the Habitats Directive). The Directive protects habitats and species of community interest through the establishment and conservation of an EU-wide network of sites known as the Natura 2000 network

Habitats Directive, informed through a Natura Impact Statement (NIS), to determine whether or not the proposed plan in combination with any other plan or project would adversely affect the integrity of a European site in light of its Conservation Objectives.

Public Authorities and Appropriate Assessment

The duties of public authorities in relation to nature conservation are laid out principally in Article 27 of the Habitats Regulations 2011. Uisce Éireann is defined as a 'public authority' for the purposes of the 2011 Regulations.

The first step of the AA process is to carry out a screening to establish whether, in relation to a particular plan or project, there is potential for LSEs to any European site(s). Specifically, Regulation 42(1) states:

"Subject to Regulation 42A, a Screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site."

Regulation 42A applies to situations where the Minister for Housing, Local Government and Heritage is the person responsible for making or adopting the relevant plan or project, so is not applicable in respect of the CWS.

Regulation 42(6) states that:

"The public authority shall determine that an Appropriate Assessment of a plan or project is required where the plan or project is not directly connected with or necessary to the management of the site as a European site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site."

In the context of Article 6(3), Uisce Éireann must carry out Screening for AA of the CWS to assess whether, on the basis of objective scientific information, the CWS individually or in-combination with other plans or projects, is likely to have a significant effect on a European site. If this screening determines that it cannot be excluded, on the basis of objective scientific information, that the CWS, individually or in combination with other plans or projects, will have a significant effect on a European site, then Uisce Éireann must determine that an Appropriate Assessment of the CWS is required.

To assist in carrying out any Appropriate Assessment that may be required following screening, Uisce Éireann must prepare a Natura Impact Statement (NIS), which is a report comprising the scientific examination of a plan or project and the relevant European site or European sites, to identify and characterise any possible implications of the 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 including, but not limited to, any plans, maps or drawings, scientific information or data required to enable the carrying out of an Appropriate Assessment.

In carrying out the full Appropriate Assessment, the Habitats Regulations 2011 require Uisce Éireann to take into account:

- The NIS;
- Any other plans or projects that may, in combination with the plan or project under consideration, adversely affect the integrity of a European site;
- Any supplemental information furnished in relation to any such report or statement;
- If appropriate, any additional information furnished in relation to the NIS;
- Any information or advice obtained by Uisce Éireann;

- If appropriate, any written submissions or observations made to Uisce Éireann in relation to the application for consent for the CWS; and
- Any other relevant information.

Following the Appropriate Assessment process, Uisce Éireann must then only adopt the CWS after having determined that the CWS shall not adversely affect the integrity of any European site(s).

Overlap with Strategic Environmental Assessment

A Strategic Environmental Assessment (SEA) of the CWS is being carried out concurrently with the AA process. SEA is required under the EU Council Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive) and are transposed into our national legislation via regulations[3]. The purpose of SEA is to enable plan-making authorities to incorporate environmental considerations into decision-making at an early stage and in an integrated way throughout the plan making process and to:

- Identify, evaluate and describe the potential significant environmental effects of implementing the CWS;
- Ensure that identified significant effects are communicated, mitigated and that the effectiveness of mitigation is monitored;
- Identify beneficial (and neutral) effects, and to ensure these are communicated; and
- Provide opportunity for stakeholder and public involvement.

There is a degree of overlap between the requirements of the SEA and AA and, in accordance with best practice, an integrated process has been and will be carried out between the development of the CWS, the SEA and the AA, such as sharing of baseline data where relevant, cohesive assessment of the potential ecological effects of the CWS on European sites, their qualifying features, and clarification on more technical aspects of the CWS. These processes together will inform and shape the development of the CWS. The spatial areas used within the SEA and AA vary slightly due to the different receptors being assessed. This is explained in more detail in the "Geographical Scale of the CWS" section in Chapter 2 of this report.

Figure 1.1 below outlines the SEA and AA Stages and how they align with the development of the CWS.

[3] In Ireland, the SEA Directive has been transposed into national legislation through S.I. No. 435 of 2004 (European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, as amended by S.I. No. 200 of 2011 (European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011). Also, S.I. No. 436 of 2004 (Planning and Development (Strategic Environmental Assessment) Regulations 2004, as amended by External link S.I. No. 201 of 2011 (Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011).

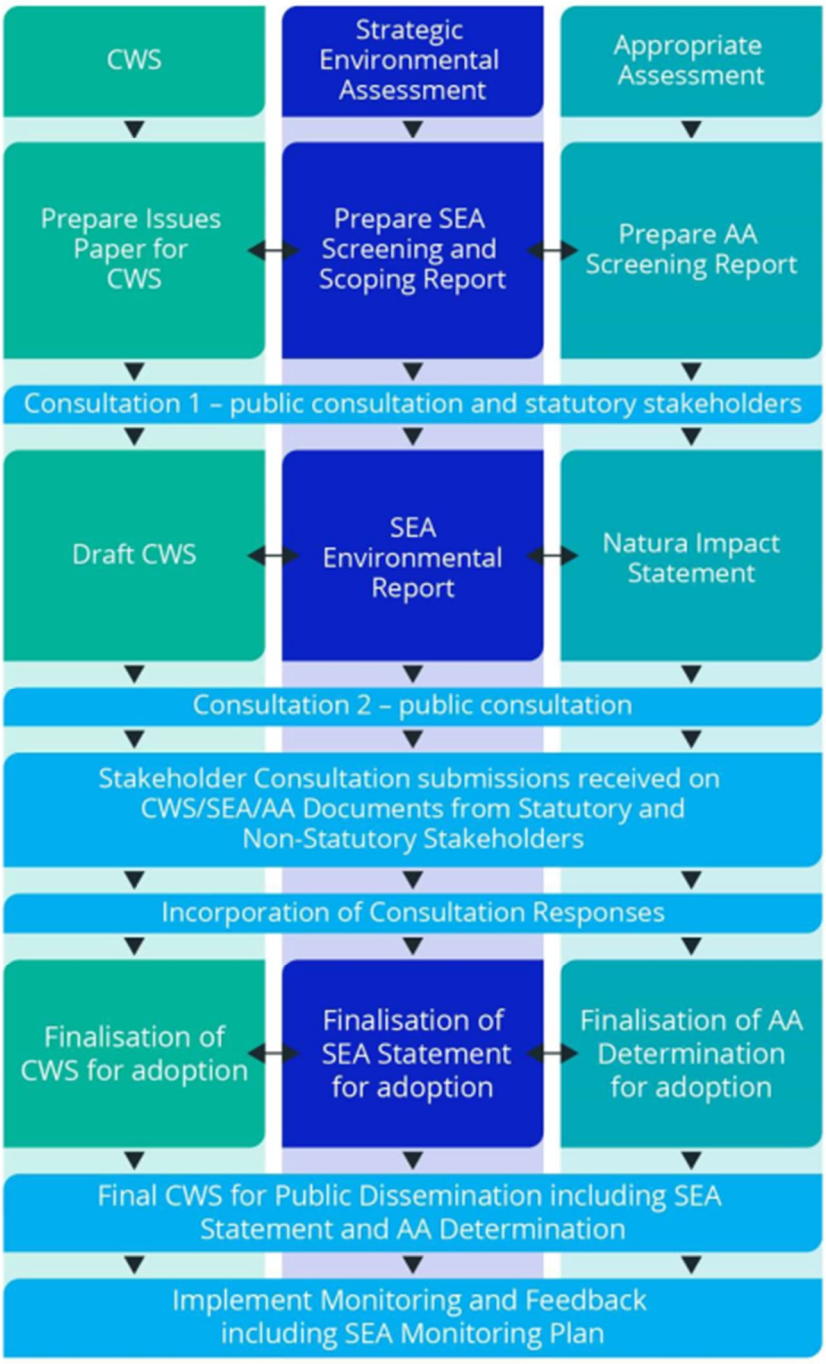

Figure 1.1: CWS development with SEA and AA process

Consultation

Consultation is a mandatory requirement in the SEA process and responses often make specific reference to the AA process. The CWS will be developed following two phases of consultation. In line with Article 9 (5) of the SEA Regulations (S.I. No. 435 of 2004 as amended by S.I. 200 of 2011), the first consultation will include the SEA Scoping Report being issued to the following statutory Environmental Authorities:

- The Environmental Protection Agency (EPA);

- Department of Housing, Local Government and Heritage (DHLGH);
- The Department of Agriculture, Food and the Marine (DAFM); and
- Department of Environment, Climate and Communications (DECC).

The first consultation will also include public consultation. The AA Screening Report will be issued with the SEA Scoping Report. In addition, a copy of this AA Screening Report and the SEA Scoping Report will be published online for public consultation.

Feedback received on the AA Screening Report and the SEA Scoping Report will be reviewed and taken into account as the draft CWS, SEA Environmental Report and NIS are prepared.

As part of the second phase of consultation, Uisce Éireann will carry out a public consultation on the draft CWS together with the SEA Environmental Report and NIS in 2025.

2 Development of the CWS

Scope of the CWS

The CWS is a regional level strategy identifying how to provide long-term, sustainable, integrated wastewater drainage systems for Uisce Éireann's customers in the CMA which incorporates needs of stakeholders, supports economic growth, allows for climate change and meets the demand of a growing population without causing adverse impacts on the environment. The CWS will include the identification of medium and long-term solutions for upgrading and building new wastewater infrastructure up to 2080.

Objectives of the CWS

The key objectives of the CWS are as follows:

- Development of a sustainable wastewater strategy for the CMA consistent with the EU Water Framework Directive (WFD) and Urban Wastewater Treatment Directive (UWTD).
- 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 National Planning Framework (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 Uisce Éireann's Water Services Strategic Plan (WSSP) and other Uisce Éireann plans and strategies including the National Wastewater Sludge Management Plan (NSMP) and the Regional Water Resources Plan (RWRP) South-West.
- Evaluation of alternative solutions and identification of the medium and long-term solutions for upgrading and building new wastewater infrastructure up to 2080.
- To develop an adaptable strategy where outcomes are expected to be linked to volatile influences such as climate and population change.

Geographical Scale of the CWS

The geographical area of the CWS is made up predominantly of the CMA, with the boundary extended slightly at the north-west of the CMA to include the village of Grenagh. The CWS core study area for the SEA and AA comprises the CMA and the Cork Harbour and Cork Outer Harbour WFD waterbodies. However, for the AA, the Zone of Influence of European sites can extend outside of this core study area as it depends on the effect pathway, as well as the specific nature of different habitats/species for which a European site is designated including functional and supporting habitat. The Zone of Influence for these potential pathways is defined in Table 4.1. This Zone of Influence will also be used in the SEA when assessing European sites to ensure the SEA and AA align. The SEA must also consider a hydrometric modelling area to identify the WFD waterbodies within the Zone of Influence outside the Core study area.

The core study area along with WFD waterbodies, urban areas and pressure zones can be seen in Figure 2.1 in this report. The various spatial areas used within the SEA are shown in Section 3 of the SEA Scoping Report.

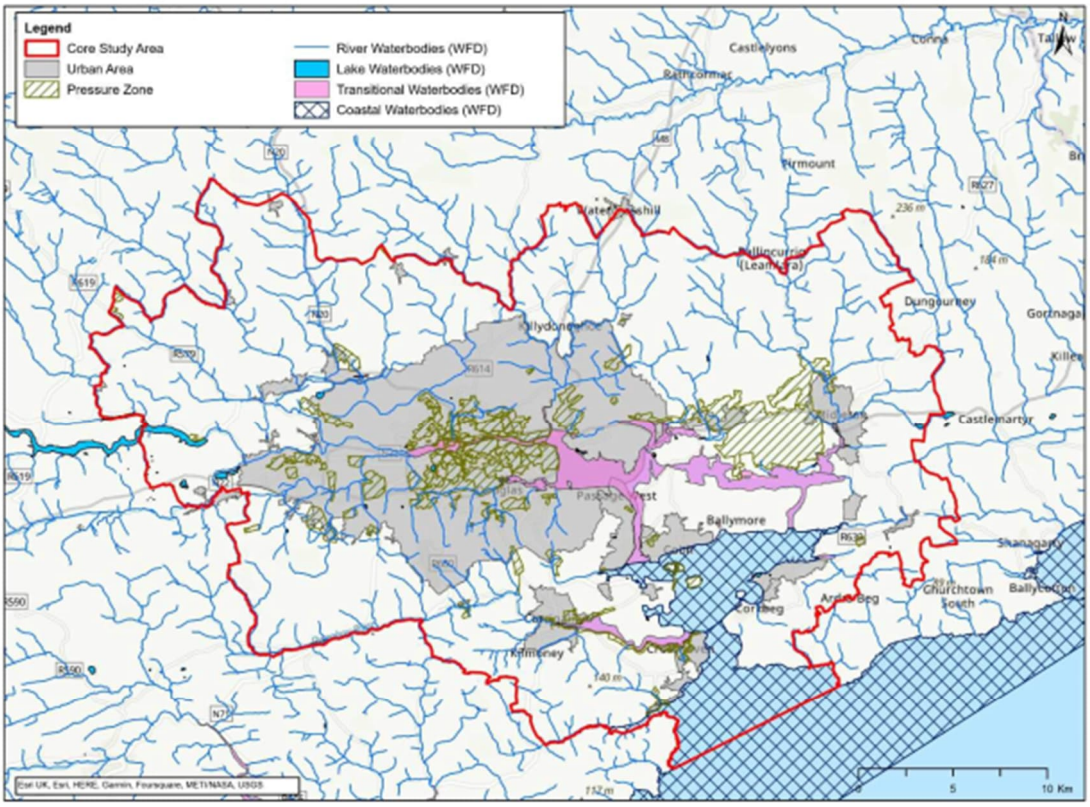

Figure 2.1: CWS study area with WFD waterbodies and key urban areas and pressure

Temporal Scale

The CWS will provide the strategy for wastewater management in the CMA over the period 2025 to 2080, and will be reviewed regularly in light of any significant changes which may alter any conclusions. It is intended that the CWS will be published in Spring 2025, with 2023 as the base year of the study.

Transboundary Effects

The CWS solely covers Uisce Éireann's operational area within and surrounding the CMA which is approximately 240km south of the border between the Republic of Ireland and Northern Ireland and is therefore not a transboundary plan. There are also no shared WFD catchments between the CWS and Northern Ireland. Transboundary effects are therefore not considered any further in the assessment.

Identification of Options

The Wastewater Strategy will consider the capacity of existing wastewater infrastructure and will identify options for upgrading and building new wastewater infrastructure. The CWS methodology will assess the various areas and issues within the study area and use this information to identify options to address issues and provide sustainable, reliable wastewater systems.

Assessment Methodology Overview

The optioneering process for the CWS will include the following steps:

a. Develop long list of unconstrained options;
b. Course screening of unconstrained options to produce short list of constrained options;
c. Fine screening of constrained options to develop short list of options; and
d. Final assessment of short list.

The following subsections set out the process to be followed at each stage of the optioneering process, including how the AA and SEA will be integrated such that environmental considerations are considered throughout.

Unconstrained Options List

The first stage of the options assessment will involve identifying and evaluating an unconstrained list of solutions to meet the identified need, regardless of cost, environmental or social implications. The intervention hierarchy will involve:

- Planning area solutions – inter-catchment approaches;
- System operation of assets (both WwTPs and networks/assets);
- Catchment measures - 'green' measures such as Sustainable Urban Drainage Systems (SUDs); and
- System upgrades or new assets.

A long list of options will be compiled for each agglomeration and design horizon (2030, 2050 and 2080), which will include:

- Do nothing;
- Minimal upgrades via process optimisation;
- Reuse and upgrading of existing assets;
- Pump away options;
- Construction of new plants and/or relocation of outfalls;

Coarse Screening

Options included in the unconstrained options list will be subject to coarse screening against a variety of criteria (including environmental and sustainability considerations, which includes the potential for adverse effects on the integrity of European sites) using a red – amber – green (RAG) rating system. Options with red rating (unfeasible options) will be discarded from the optioneering process at this point, and options with amber rating against several criteria will also be evaluated for discardment. Options with an amber rating against one criteria or with green ratings will progress to the constrained options list.

Constrained Options List

Options on the constrained options list will be developed further, taking into account regional considerations and focussing on drainage, treatment and discharge. The following specific options will be considered:

- Local treatment options;
- Flow transfer to Cork main drainage network, between catchments, or to a new WwTP;
- Infrastructure and asset upgrades to improve both treatment and flow transfer capacity;
- Outfall upgrades to maintain and improve environmental objectives of receiving waterbody;
- Works necessary to Storm Water Overflows to meet relevant environmental limits (for example upgrade or decommissioning, downstream sewer upsizing or diversion, storage facilities, storm separation and increased flows to full treatment).

Fine Screening

A Multi Criteria Assessment (MCA) will be completed to refine the constrained options list into the short list. MCA involves assessing options based on key criteria (to be confirmed, but under the broad headings of resilience, deliverability, progressibilty and sustainability) to verify criteria and understand risks. Environmental sub-criteria under the sustainability heading will be linked to the environmental topics outlined in the SEA Scoping Report as well as consideration of impacts on European sites as required through the Appropriate Assessment process. Each option on the constrained list will be considered against sub-

criteria, resulting in scores between -3 and +3, with a -3 score being the most negative score and a +3 score being the most positive score.

Short List

The options short list will include three options per WwTP/agglomeration and per design horizon. All shortlisted options may be subject to water quality and network modelling to inform further assessment, and sufficiently developed in order to inform CAPEX (Capital Expenditure) and OPEX (Operational Expenditure) cost estimation (direct and indirect costs, including environmental and social costs).

Final Assessment of Short List

Short listed options will be assessed against bespoke criteria, informed by modelling outputs and stakeholder inputs. Long term strategic plans and growth projections will be considered in determining potential option combinations, and a phased development approach used to facilitate the use of existing assets as far as possible.

Consideration of European Sites

There is some overlap with the Birds Directive (2009/147/EC), the Habitats Directive (92/43/EEC) and the Water Framework Directive (WFD) (2000/60/EC) in relation to the protection of water dependent habitats and species. Under the WFD areas are designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant European sites. The linkages between the Birds and Habitats Directives (BHD) and the WFD were discussed in a document published by the European Commission (2011) which states:

"Any Natura 2000 site with water-dependent (ground- and/or surface water) Annex I habitat types or Annex II species under the Habitats Directive or with water-dependent bird species of Annex I or migratory bird species of the Birds Directive, and, where the presence of these species or habitats has been the reason for the designation of that protected area, has to be considered for the register of protected areas under WFD Art. 6. These areas are summarised as "water-dependent Natura 2000 sites". For these Natura 2000 sites, the objectives of BHD and WFD apply".

Therefore, WFD waterbody status will be taken into account when compiling and assessing options that will involve WFD waterbodies, such as outfalls. As many of the European designated sites in Ireland are water-dependent, they may potentially be impacted by some options and therefore will also be taken into account in the optioneering process.

3 Appropriate Assessment Methodology

Stages of Appropriate Assessment

The methodology for undertaking assessment in relation to AA has evolved from European Commission (2021) guidance and Irish guidance from the former Department of Environment, Heritage and Local Government (2010a). The entire process can be broken down into four stages (Article 42/43 of the Habitats Regulations 2011), as outlined below. If at any stage in the process it is determined that there will be no implications for the European site in view of the site's conservation objectives, the process is effectively completed. The four stages are:

Stage 1 - Screening for Appropriate Assessment (AA)/Test of Likely Significant Effects: Screening determines whether an AA is required by determining if the project or plan is likely to have a significant effect(s) on any European site(s) either alone or in-combination with other plans or projects, in light of the site's conservation objectives (see Figure 3.1).

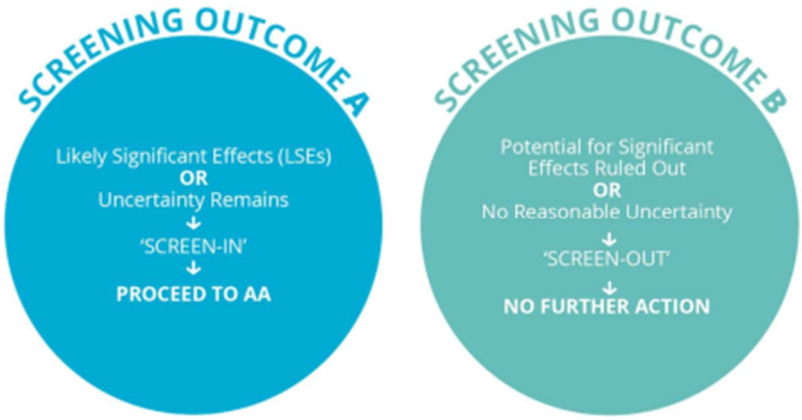

Figure 3.1: Screening for AA

Stage 2 – Appropriate Assessment: If the screening has determined there are LSEs from the plan/project either alone or in-combination with other plans and projects on European Site(s) the implication for European sites are further assessed in the context of the implications for their conservation objectives and Adverse Effects on Site Integrity (AESI) analysed. If it is determined on further analysis and data gathering that the plan/project will not adversely affect the integrity of the relevant European site(s) then the Stage 2 Appropriate Assessment can conclude no AESI. However, if there are potential issues identified for the conservation objectives of the European site(s) then mitigation is required to protect the site's conservation objectives. The AESI analysis is re-run and considers the structure and function of European sites, their conservation objectives and effects from the project/plan both alone and in-combination with other projects or plans. Where AESI are identified, mitigation measures are proposed as required to avoid adverse effects on the integrity and conservation objectives of the European site(s). The information and data to inform the AA process is documented within a NIS. This is provided to the competent authority to facilitate their AA determination of the plan or project.

Stage 3 – Assessment of Alternative Solutions: Following AA, including mitigation proposals, if AESI remain, or uncertainty remains and the project/plan is to be progressed, an Assessment of Alternative Solutions is required under the provisions of Article 6(4) of the Habitats Directive. This process examines the alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. If no alternatives exist, or all alternatives would result in adverse effects on the integrity of a European site, then either the process moves to the next stage or the project is abandoned.

Stage 4 – Imperative Reasons of Over-Riding Public Interest (IROPI): In the unlikely event where an Assessment of Alternative Solutions fails to identify any suitable alternatives, then for a project or plan to be progressed it must meet the requirements of IROPI. In this case the provisions of Article 6(3) cannot be met and therefore, the provisions of Article 6(4) are used. If in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed, thus compensatory measures are implemented to maintain the coherence of the European site network in the face of adverse effects to the integrity of the site(s).

Approach to AA of Cork Wastewater Strategy

The approach to this AA Screening takes consideration of the strategic nature of the CWS and uses objective information to determine whether the CWS will have LSEs for European sites in the manner outlined in *Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland* (Court of Justice of the European Union, Case C-6/04, Opinion of Advocate General Kokott)[4] and Waddenzee (Court of Justice of the European Union, C-127/02).

Application of the AA process at Plan level

In the context of AA Screening, when applying the 'test of significance' the test is of the "likelihood" of effects rather than the "certainty" of effects. In accordance with the Waddenzee Judgement[5], a likely effect is one that cannot be ruled out based on objective information and is underpinned by the precautionary principle and the test of beyond reasonable scientific doubt. This test therefore sets a low bar: a plan should be considered 'likely' to have an effect if the competent authority (in this case Uisce Éireann) is unable (on the basis of objective information) to exclude the possibility that the plan could have significant effects on any European site, either alone or in-combination with other plans or projects. An effect is considered to be 'significant' if it could undermine a European site's conservation objectives.

The methodology for undertaking Screening for AA can be applied at both a project and plan level assessment. The suitability of the data and information used and any decisions flowing from its use in the CWS assessment have to meet the provisions and requirements of the Habitats Directive. The strategic assessments at the plan level will inevitably be undertaken at a higher level than would be the case for projects. However, the CWS does not provide consent for any future projects arising from it or future iterations of the plan but, demonstrates that the protection for the European site network is suitably considered and achievable in the context of the remit of the plan. Also, any future project level AA Screenings and/or NIS will have regard for the plan level AA Screening as the projects have been identified or specified from the CWS. To note, all of Uisce Éireann's projects are screened for AA. Therefore, all projects arising from the CWS will additionally be required to go through individual environmental assessments (including AA Screening and if needed AA). These will be obligatory in support of planning applications (where a project requires planning permission) or in support of licensing applications (for example, for waste water discharge licences).

Compliance of the CWS development process with the Habitats Directive

The CWS identifies needs in terms of quantity, quality and reliability, and develops a methodology (Option Assessment Methodology) to develop interventions to address this need. The AA Screening for the CWS has assessed at a high level the Options Assessment Methodology and the option types that are likely to arise from the CWS. The CWS identifies option types that could be applied across the CMA. The AA Screening for the CWS therefore assesses the potential impacts on European sites of the CWS at a regional scale within the CMA.

Applying the above approach demonstrates that the development of the CWS is compliant with the requirements of the Habitats Directive.

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62004CC0006 (Accessed December 2023).
[5] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62002CJ0127&qid=1702581659279 (Accessed December 2023).

Guidance documents in relation to Appropriate Assessment

The requirements of Article 6 of the Habitats Directive for the CWS have been applied following the guidance documents:

- AA of Plans and Projects in Ireland: Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010a);
- Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. (Office of the Planning Regulator, 2021).
- Assessment of Plans and Projects in Relation to Natura 2000 Sites – Methodological Guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021);
- Communication from the Commission on the Precautionary Principle (European Commission, 2000);
- Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission (European Commission, 2007);
- Marine Natura Impacts Statements in Irish Special Areas of Conservation. A Working Document (Department of Arts, Heritage and the Gaeltacht, 2012); and
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission, 2018).

The following circulars have also been used:

- AA under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 and PSSP 2/10 (Department of Environment, Heritage and Local Government, 2010b);
- AA of Land Use Plans. Circular Letter SEA 1/08 & NPWS 1/08 (Department of Environment, Heritage and Local Government, 2008a);
- Compliance Conditions in respect of Developments requiring (1) Environmental Impact Assessment (EIA); or (2) having potential impacts on Natura 2000 sites. Circular Letter PD 2/07 and NPWS 1/07 (Department of Environment, Heritage and Local Government, 2007a);
- Guidance on Compliance with Regulation 23 of the Habitats Directive. Circular Letter NPWS 2/07 (Department of Environment, Heritage and Local Government, 2007b); and
- Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments. Circular L8/08 (Department of Environment, Heritage and Local Government, 2008b).

Guiding Principles and Case Law

A number of cases have been brought to both the national and European courts in relation to the AA process. Irish departmental guidance (Department of Environment, Heritage and Local Government, 2010a) in relation to AA was published over 10 years ago. Therefore, recent case law has, in many cases, superseded this guidance. However, recent guidance from the OPR (2021) in relation to AA Screening has now been published and considered in this assessment. Relevant case law, ECJ rulings and EC publications have also been considered in the preparation of the AA Screening for the CWS.

Identification of European Sites

Sites within the Natura 2000 Network are referred to as European sites and include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are designated for the conservation of Qualifying Interests (QI), Annex I habitats and Annex II species (other than birds). SPAs are designated for the conservation of Special Conservation Interest (SCI) Annex I birds and other regularly occurring migratory birds and their habitats.

Irish departmental guidance on the Zone of Influence (ZoI) to be considered during the AA stated the following:

"A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al., 2006). For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must

be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects".

However, the actual extent of the ZoI depends on the effect pathway, as well as the specific nature of different habitats/species for which a European site is designated including functional and supporting habitat (OPR, 2021). Therefore, for these reasons the ZoI must be scientifically defined and based upon further information.

As part of the desk-based assessment, when assessing likely ZoI for all options the "source-pathway-receptor" model will be applied. European sites with a hydrological link to any given option or the study area will be considered to be within the ZoI. As such, sites that are outside the boundary of the study area may also be included in the assessment where there is an effects pathway.

The CWS core study area covers the CMA, with the boundary extended slightly to cover a larger area. The core study area is within the County of Cork. Therefore, all European sites within the CMA and European sites with potential effects pathways located outside the CMA were initially considered to be potentially within the ZoI of the CWS.

Special Areas of Conservation

SACs cover 58 habitat types recognised in Annex I of the Habitats Directive, with 16 habitats designated as "priority" habitats owing to their ecological vulnerability (NPWS, 2019a). Habitats for which SACs are designated include lakes, raised bogs, blanket bogs, turloughs, sand dunes, machair, heaths, rivers, woodlands, estuaries and sea inlets. In addition, the Habitats Directive recognises 26 Annex II species. Some of the species for which SACs have been designated include but are not limited to: Atlantic salmon (*Salmo salar*), otter (*Lutra lutra*), lesser horseshoe bat (*Rhinolophus hipposideros*), freshwater pearl mussel (*Margaritifera margaritifera*) and Killarney fern (*Trichomanes speciosum*). There are 441 SACs in Ireland and of these 358 are water-dependent (Department of Housing, Planning and Local Government, 2018c). These SACs support various habitats and species that are dependent on various water sources. There are approximately 800 water bodies within European sites, all supporting water dependent habitats and species. A number of significant pressures on these water bodies have been identified (Department of Housing, Planning and Local Government, 2018c), including:

- Agriculture;
- Hydromorphological pressures;
- Forestry;
- Urban wastewater;
- Anthropogenic pressures;
- Abstractions; and
- Invasive species.

Of the pressures noted above, urban wastewater is of particular relevance to the CWS.

There is only one SAC within the CWS core study area, which is the Great Island Channel SAC. The Annex I habitats within the study area designated within the Great Island Channel SAC are mudflats and sandflats not covered by seawater at low tide [1140], and Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]. These are found within the North Channel Great Island, Lough Mahon and Lough Mahon (Harper's Island) transitional waterbodies. There are no Annex II species designated as QIs within the Great Island Channel SAC.

Special Protection Areas

The majority of the wintering water birds and breeding seabirds occurring in Ireland are considered to be regularly occurring migratory birds. Over 60% of the 25 Annex I listed species that now occur in the Republic

of Ireland on a regular basis belong to the breeding seabird and wintering waterbird groups. This has in part led to the situation of the majority (> 80%) of Ireland's SPAs being designated for these two bird groups.

Some of the productive marine intertidal zones of bays and estuaries are included within SPAs and these provide vital food resources for several wintering wader species, including knot (*Calidris canutus*), dunlin (*Calidris alpina*) and bar-tailed godwit (*Limosa lapponica*). Also included in the SPA network are marine waters adjacent to breeding seabird colonies and other important areas for divers, seaducks and grebes.

Finally, a number of inland wetland sites and areas of blanket bog and upland habitats have also been designated as SPAs for wintering water birds. These sites provide important breeding and foraging areas for numerous other species including merlin (*Falco columbarius*) and golden plover (*Pluvialis apricaria*). Agricultural land is also represented within the SPA network ranging from the extensive farmland of upland areas where hedgerows, wet grassland and scrub offer feeding and/or breeding opportunities for hen harrier (*Circus cyaneus*) to the intensively farmed coastal polderland where internationally important numbers of swans and geese occur.

There is one SPA within the CWS core study area; this is the Cork Harbour SPA. There are 25 QI bird species (and wetlands and waterbirds [A999]) designated within this SPA. The QI bird species designated within this SPA are included in Table 3.1.

Table 3.1: QI bird species designated within Cork Harbour SPA

Common name	Scientific name	European code
Little grebe	*Tachybaptus ruficollis*	A004
Great crested grebe	*Podiceps cristatus*	A005
Cormorant	*Phalacrocorax carbo*	A017
Grey heron	*Ardea cinerea*	A028
Shelduck	*Tadorna tadorna*	A048
Wigeon	*Anas penelope*	A050
Teal	*Anas crecca*	A052
Mallard	*Anas platyrhynchos*	A053
Pintail	*Anas acuta*	A054
Shoveler	*Anas clypeata*	A056
Red-breasted merganser	*Mergus serrator*	A069
Oystercatcher	*Haematopus ostralegus*	A130
Golden plover	*Pluvialis apricaria*	A140
Grey plover	*Pluvialis squatarola*	A141
Lapwing	*Vanellus vanellus*	A142
Dunlin	*Calidris alpina*	A149
Black-tailed godwit	*Limosa limosa*	A156

Bar-tailed godwit	*Limosa lapponica*	A157
Curlew	*Numenius arquata*	A160
Redshank	*Tringa totanus*	A162
Greenshank	*Tringa nebularia*	A164
Black-headed gull	*Chroicocephalus ridibundus*	A179
Common gull	*Larus canus*	A182
Lesser black-backed gull	*Larus fuscus*	A183
Common tern	*Sterna hirundo*	A193

Conservation Objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of annexed habitats and annexed species of community interest for which an SAC or SPA has been designated. The conservation objectives (COs) for a European site are set out to ensure that the QIs/SCIs of that site are maintained or restored to a favourable conservation condition. Maintenance of favourable conservation condition of habitats and species at a site level in turn contributes to maintaining or restoring favourable conservation status of habitats and species at a national level and ultimately at the European site network level.

Detailed site synopses for each European site are available from the NPWS website[6]. In Ireland 'generic' COs have been prepared for all European sites, while 'site specific' COs have been prepared for a number of individual sites to take account of the specific QIs/SCIs of that site. Both the generic and the site-specific COs aim to define the requirements for favourable conservation condition for habitats and species at the site level. Generic COs, which have been developed by NPWS, encompass the spirit of site-specific COs in the context of maintaining and restoring favourable conservation condition as follows:

- For SACs: "To maintain or restore the favourable conservation condition of the Annex I habitats and/or Annex II species for which the SAC has been selected".
- For SPAs: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA".

Following on from this, favourable conservation status (or condition, at a site level) of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is "favourable".

The favourable conservation status (or condition, at a site level) of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and

[6] https://www.npws.ie/protected-sites (Accessed December 2023)

- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

A full list of the COs and QIs/SCIs that each European site is designated for relating to the CWS, as well as the attributes and targets to maintain or restore the QIs/SCIs to a favourable conservation condition are available from the NPWS website[7].

[7] https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives (Accessed December 2023)

4 Screening

Screening

This Screening for AA was informed by a desk study of all relevant environmental information and involved the following steps (broadly based on (European Commission, 2021)):

- Determined if the proposed Plan is directly connected with or necessary to the management of the site;
- Description of the proposed Plan;
- Identification of relevant European site(s);
- Assessment of likely significant effects (LSEs) on European sites; and
- Screening conclusion.

Is the CWS exempt from assessment?

The CWS is not directly connected with or necessary to the management of a European site and therefore is not exempt from assessment.

Description of the CWS

An overview of the CWS, including background and context are provided in Chapters 1 and 2 of this report.

Identification of European Sites within the CWS

As discussed in Chapter 3, all European sites within the CMA and European sites with potential effects pathways located outside the CMA were initially considered to be potentially within the ZoI of the CWS, therefore potential LSEs on the conservation objectives for these sites will be considered. There is one SAC and one SPA within the CMA core study area. There are numerous other European sites that will be considered within this assessment. Section 4.6 outlines the European sites that are considered to be within at least one ZoI of a potential pathway of the CWS, and will therefore be considered further in the assessment. All European sites within and in proximity to the CMA are shown in Figure 4.1 below.

Further information about the European sites considered in the ZoI of the CWS including distances from the core study area and their QI species and habitats can be found in Appendix A. Information regarding the WFD waterbodies and Third Schedule[8] invasive species within the CWS core study area can be found in Appendix B and Appendix C respectfully.

[8] Third Schedule of the European Communities (EC) (Birds and Natural Habitats) Regulations, 2011 (S.I. No.477/2011). High impact non-native invasive species that are subject to restrictions in terms of disturbance and management are included in this list.

Figure 4.1: European sites within and surrounding the CMA

Assessment of Likely Significant Effects

The CWS methodology will identify suitable options for the various areas throughout the CMA. The option types that will arise from the CWS will potentially result in LSEs on European sites in the absence of mitigation. Therefore, a high-level assessment of the potential LSEs of these management option types is the focus of this assessment.

When assessing the CWS, the 'source-pathway-receptor' model is applied taking consideration of all potential impact pathways connecting elements of the CWS to European sites in view of their conservation objectives.

The source-pathway-receptor conceptual model is a standard tool in environmental assessment to identify and assess potential impact pathways. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the pathway means that there is no likelihood for the effect to occur (e.g. no potential for LSEs).

The source-pathway-receptor model is focused solely on the QIs for which European sites are designated as per the latest conservation objectives from the NPWS website[9].

Table 4.1 defines the source-pathway-receptor model, the zones of influence and the extents of sensitivity of QIs for each potential impact pathway used in the assessment. It should be noted that some of the options may have no effect on European sites, while others could have beneficial impacts on European sites, for example options that seek to improve overall water quality. However, the implementation of the CWS may give rise to measures that could result in a variety of potential effects.

[9] https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives

Table 4.1: Potential effect pathways of options arising from CWS

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
Habitat loss - permanent	The provision of new infrastructure or permanent change of habitat from the plan could result in direct loss of QI habitat or supporting habitat for QI species in a European site, or functionally linked land associated with mobile QI species outside the boundaries of European sites	• The ZoI assessed is within the footprint of the plan • Physical loss of habitat is only possible within the boundary of a European site, or within an area of functionally linked land habitat outside of the European site	• QI habitats are sensitive within the boundary of their designated site • Supporting habitats of QI species are sensitive within the boundary of their designated site • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site
Habitat loss - temporary	Construction activities including temporary works areas and access routes of the plan could result in the temporary loss of habitats before reinstatement after construction is completed, potentially affecting QI habitat or supporting habitat for QI species in a European site, or functionally linked land associated with mobile QI species outside the boundaries of European sites	• The ZoI assessed is within the footprint of the plan • Physical loss of habitat is only possible within the boundary of a European site, or within an area of functionally linked land habitat outside of the European site	• QI habitats are sensitive within the boundary of their designated site • Supporting habitats of QI species are sensitive within the boundary of their designated site • Functionally linked habitats of QI species are sensitive within suitable habitat that is within the range of the QI species from their designated site
Habitat degradation – changes in water quality	Construction activities and changes in operational activities can release oils, chemicals, heavy metals, silt, etc from equipment as well as suspended solids, etc from waste materials. This can directly affect	• The ZoI assessed is within the footprint of the Proposed Scheme or within hydrologically linked areas (to the point where effects would be imperceptible such as where a watercourse meets open sea)	• QI habitats are sensitive within the boundary of their designated site • Supporting habitats of QI species are sensitive within the boundary of their designated site • Functionally linked habitats of QI species are sensitive where suitable habitat is

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
	QI species or habitats or affect them indirectly through loss of aquatic prey species, or through changes in their habitats	• Pollutants can travel along hydrological linkages such as watercourses to a considerable distance from works.	present within the range of the QI species from their designated site
Habitat degradation – hydrological changes	In-stream structures or changes to water management from the plan can cause changes in hydrology, which can alter water volumes and flows, which can in turn change the wetness of habitats or cause erosion or deposition of materials. Such changes can affect QI habitats or supporting and functionally linked habitats of QI species	• The ZoI assessed is within surface water catchments that the footprint of the plan lies within • Surface water changes can occur within catchments as changes in one location affect other locations via watercourses for example	• QI habitats are sensitive within the boundary of their designated site • Supporting habitats of QI species are sensitive within the boundary of their designated site • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site
Habitat degradation – hydrogeological changes	Construction activities such as groundworks and excavations and permanent changes to water management can cause changes to groundwater volumes and flows, which can change the hydrogeology of QI habitats and supporting or functionally linked habitats of QI species	• The ZoI assessed is within groundwater catchments that the footprint of the plan lies within • Groundwater changes can occur within catchments as changes in one location affect other locations	• QI habitats are sensitive within the boundary of their designated site • Supporting habitats of QI species are sensitive within the boundary of their designated site • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site
Habitat degradation – changes in air quality	Construction plant and vehicles emit exhausts containing pollutants that can deposit on QI habitats, which can cause direct toxic effects on QI species	• The ZoI assessed is within 200m of the footprint of the plan • Pollutant deposition from vehicles is thought to occur in insignificant amounts	• QI habitats are sensitive within the boundary of their designated site • Supporting habitats of QI species are sensitive within the boundary of their designated site

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
	and habitats or degradation of QI habitat	beyond 200m from the source	• Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site
Habitat degradation – spread of invasive species	Construction activities can cause the spread of invasive species already within the construction site (through transfer on plant or within materials moved during earthworks), or by importing materials from outside the construction site (on the wheels of plant or delivery vehicles, etc). This can cause the degradation of QI habitats or supporting and functionally linked habitats of QI species	• The ZoI assessed is within the footprint of the Proposed Scheme. • The spread or importing of invasive species can only occur within the construction site.	• QI habitats are sensitive within the boundary of their designated site • Supporting habitats of QI species are sensitive within the boundary of their designated site • Functionally linked habitats of QI species are sensitive where suitable habitat is present within the range of the QI species from their designated site
Disturbance of species	Construction activities could result in disturbance of QI species through changes in noise, vibration, movement (of people and/or vehicles) and lighting. Disturbance may lead to the abandonment of breeding, foraging or resting sites by QI species, potentially resulting in increased energy expenditure, reduced fitness and inability to complete lifecycle stages	• The ZoI assessed is within the footprint of the Proposed Scheme or within 300m of the construction or operation of the plan • 300m is considered to be an appropriate distance to assess disturbance as QI species are unlikely to be significantly disturbed beyond this distance	• QI species are sensitive within the boundary of their designated site (in supporting habitat) or within functionally linked habitats where suitable habitat is present within the range of the QI species from their designated site

Pathway name	Source-pathway-receptor model	Zone of Influence	Extent of sensitivity of receptors
Mortality	Mortality of individuals of QI species could occur directly through killing of individuals by construction works or indirectly as a result of pollution entering the watercourse	• The ZoI assessed is within the footprint of the Proposed Scheme, within 50m of watercourse crossings that will be subject to works • Direct mortality from construction activities can only occur within the construction footprint. Indirect mortality can occur near to works at watercourses that sever species commuting routes	• QI species are sensitive within the boundary of their designated site (in supporting habitat) or within functionally linked habitats where suitable habitat is present within the range of the QI species from their designated site

Identification of relevant European sites and QIs

The 'source-pathway-receptor' model was applied taking consideration of all potential impact pathways connecting elements of the CWS to European sites in view of their Conservation Objectives.

The CWS was examined with reference to its location to European sites, and taking account of the potential effects outlined in Table 4.1, the following European sites are considered to be within the ZoI of the CWS:

- Great Island Channel SAC (001058) - this site lies within the ZoIs for:
  - Habitat loss – permanent
  - Habitat loss – temporary
  - Habitat degradation – changes in water quality
  - Habitat degradation – hydrological changes
  - Habitat degradation – hydrogeological changes
  - Habitat degradation – changes in air quality
  - Habitat degradation – spread of invasive species
  - Disturbance of species
  - Mortality
- Ballymacoda (Clonpriest and Pillmore) SAC (000077) - this site lies within the ZoIs for:
  - Habitat degradation – changes in water quality
  - Habitat degradation – hydrological changes
  - Habitat degradation – hydrogeological changes
- The Gearagh SAC (000108) - this site lies within the ZoIs for:
  - Habitat degradation – hydrological changes
  - Habitat degradation – hydrogeological changes
- Cork Harbour SPA (004030) - this site lies within the ZoIs for:
  - Habitat loss – permanent
  - Habitat loss – temporary
  - Habitat degradation – changes in water quality
  - Habitat degradation – hydrological changes
  - Habitat degradation – hydrogeological changes
  - Habitat degradation – changes in air quality

    - Habitat degradation – spread of invasive species
    - Disturbance of species
    - Mortality
- Ballycotton Bay SPA (004022) - this site lies within the ZoIs for:
    - Habitat loss – permanent (functionally linked habitat)
    - Habitat loss – temporary (functionally linked habitat)
    - Habitat degradation – changes in water quality
    - Habitat degradation – hydrological changes
    - Habitat degradation – hydrogeological changes
    - Disturbance of species
    - Mortality
- Sovereign Islands SPA (004124) - this site lies within the ZoIs for:
    - Habitat loss – permanent (functionally linked habitat)
    - Habitat loss – temporary (functionally linked habitat)
    - Disturbance of species
- Ballymacoda Bay SPA (004023) - this site lies within the ZoIs for:
    - Habitat loss – permanent (functionally linked habitat)
    - Habitat loss – temporary (functionally linked habitat)
    - Habitat degradation – changes in water quality
    - Habitat degradation – hydrological changes
    - Habitat degradation – hydrogeological changes
    - Disturbance of species
    - Mortality
- Blackwater Estuary SPA (004028) - this site lies within the ZoIs for:
    - Habitat loss – permanent (functionally linked habitat)
    - Habitat loss – temporary (functionally linked habitat)
    - Disturbance of species
- Blackwater Callows SPA (004094) - this site lies within the ZoIs for:
    - Habitat loss – permanent (functionally linked habitat)
    - Habitat loss – temporary (functionally linked habitat)
    - Disturbance of species
- Courtmacsherry Bay SPA (004219) - this site lies within the ZoIs for:
    - Habitat loss – permanent (functionally linked habitat)
    - Habitat loss – temporary (functionally linked habitat)
    - Disturbance of species
- The Gearagh SPA (004109) - this site lies within the ZoIs for:
    - Habitat loss – permanent (functionally linked habitat)
    - Habitat loss – temporary (functionally linked habitat)
    - Habitat degradation – hydrological changes
    - Habitat degradation – hydrogeological changes
    - Disturbance of species

The QIs and COs of these European sites are detailed in Appendix A and these European sites are shown in Figure 4.1 above. The European sites and potential impacts listed above are currently being considered and assessed.

In-combination Effects

Under Article 6(3) of the Habitats Directive an assessment of in-combination effects of the CWS with other plans and projects is considered. Consideration has been given, at this stage of the CWS, to other relevant plans on a similarly strategic level that have clear potential to have an in-combination effect upon European Sites. The plans listed below are considered and assessed. Relevant projects will also be included for in-combination assessment. The plans currently considered include the following:

- Water Services Strategic Plan (Uisce Éireann, 2015).
- National Wastewater Sludge Management Plan (Uisce Éireann, 2016a).
- Lead in Drinking Water Mitigation Plan (Uisce Éireann, 2016b).
- Regional Water Resources Plan – South West (Uisce Éireann, 2023).
- Uisce Éireann Biodiversity Action Plan (Uisce Éireann, 2021).
- National Planning Framework. Ireland 2040 Our Plan (DHPLG, 2018a).
- National Development Plan 2021-2030 (DPER, 2021).
- National Adaptation Framework (DCCAE, 2018).
- National Marine Planning Framework (NMPF) (DHPLG, 2021).
- Southern Regional Spatial and Economic Strategy (Southern Regional Assembly, 2020).
- River Basin Management Plan (RBMP) 2018-2021 (DHPLG, 2018c)/Draft River Basin Management Plan for Ireland 2022-2027 (DHLGH, 2022).
- Catchment Flood Risk Assessment and Management (CFRAM) Programme (Office of Public Works (OPW), 2018).
- Water Quality and Water Services Infrastructure, Climate Change Sectoral Adaptation Plan (DHPLG, 2019).
- Climate Action Plan 2023 (DECC, 2023).
- Ireland's 4th National Biodiversity Action Plan 2023-2030 (DHLGH, 2024).
- Cork City Development Plan 2022-2028 (Cork City Council, 2022).
- Cork County Development Plan 2022-2028 (Cork County Council, 2022).
- Cork City Heritage and Biodiversity Plan 2021-2026 (Cork City Council, 2021).
- Draft Cork City Climate Action Plan 2024-2029 (Cork City Council, 2023).
- Draft Cork County Council Climate Action Plan 2024-2029 (Cork County Council, 2023).

Given the level of detail that is available for the CWS and the potential for likely significant effects, in-combination effects as a result of the implementation of the CWS cannot currently be ruled out. However, no additional impact pathways have been identified in-combination than those identified in the 'alone' assessment. All potential impact pathways have been screened in for Appropriate Assessment alone where there is an overlap between the ZoI from the Plan. There may be in-combination effects through these pathways, but these will be addressed in the NIS. Where potential impact pathways have been screened out alone, this has been concluded on the basis that there is no overlap of the ZoI from the Plan and the QIs of European sites. As there is no overlap, there is no pathway to an effect and therefore no effect. It is not possible therefore for the Plan to contribute to any in-combination effect and so none of these pathways need to be included in the Appropriate Assessment.

5 Screening Conclusion

Stage 1 of the AA process (Screening for AA) described herein relates to the CWS. The CWS is a regional scale plan covering the CMA in County Cork.

Given the strategic nature of the CWS, the current stage of preparation and in light of a number of uncertainties relating to the implementation of the CWS going forward, it is considered that the potential for LSEs on one or more European sites, in view of the sites' conservation objectives, cannot be excluded either alone or in-combination. In the absence of more detailed information on the CWS and management options listed therein at this stage, the precautionary principle must be applied.

Therefore, in accordance with Article 6(3) of the Habitats Directive, Stage 2 AA of the CWS is required. This will be presented in an NIS to fully inform the AA determination to be undertaken by Uisce Éireann.

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Appendix A European Sites in the ZoI of the CWS

European site name and code	Distance of site from the proposed works	Conservation Objectives and Qualifying Interests (*=priority habitat).
Special Area of Conservation (SAC)		
Great Island Channel SAC (001058)	Direct distance: within study area Hydrological distance: within study area	**To maintain or restore the favourable conservation condition of the Annex I habitats for which the SAC has been selected.** **Annex I Habitats:** Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
Ballymacoda (Clonpriest and Pillmore) SAC (000077)	Direct distance: 10km east Hydrological distance: 16km downstream via the Womanagh River	**To maintain or restore the favourable conservation condition of the Annex I habitats for which the SAC has been selected.** **Annex I Habitats:** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
The Gearagh SAC (000108)	Direct distance: 14.9km west Hydrological distance: 23.1km upstream via the River Lee	**To maintain or restore the favourable conservation condition of the Annex I habitats and Annex II species for which the SAC has been selected.** **Annex I Habitats:** Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation [3270] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II Species:** Otter *(Lutra lutra)* [1355]
Special Protection Area (SPA)		
Cork Harbour SPA (004030)	Direct distance: within study area	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.**

	Hydrological distance: within study area	Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Common Tern (*Sterna hirundo*) [A193] Wetland and Waterbirds [A999]
Ballycotton Bay SPA (004022)	Direct distance: 3.7km southeast Hydrological distance: 4.3km downstream via the Shanagarry River	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Turnstone (*Arenaria interpres*) [A169]

		Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Wetland and Waterbirds [A999]
Sovereign Islands SPA (004124)	Direct distance: 9.3km southwest Hydrological distance: 19.2km via the Celtic Sea	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Cormorant (*Phalacrocorax carbo*) [A017]
Ballymacoda Bay SPA (004023)	Direct distance: 10km east Hydrological distance: 15.2km downstream via the Womanagh River	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Wetland and Waterbirds [A999]
Blackwater Estuary SPA (004028)	Direct distance: 14.5km east Hydrological distance: 37.3km via the Celtic Sea	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]

Blackwater Callows SPA (004094)	Direct distance: 14.5km north Hydrological distance: 71.4km via the Celtic Sea and upstream via the Blackwater River	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]
Courtmacsherry Bay SPA (004219)	Direct distance: 15.3km southwest Hydrological distance: 42.3km upstream via Celtic Sea	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Great Northern Diver (*Gavia immer*) [A003] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Anas penelope*) [A050] Red-breasted Merganser (*Mergus serrator*) [A069] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Wetland and Waterbirds [A999]
The Gearagh SPA (004109)	Direct distance: 16.2km west Hydrological distance: 24.4km upstream via the River Lee	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Coot (*Fulica atra)* [A125] Wetland and Waterbirds [A999]

Appendix B WFD Waterbodies within CWS Core Study Area

Name	Code	Waterbody Type	WFD Status 2016-2021	WFD Risk Rating
Aughnaboy (Cork)_010	IE_SW_19A020300	River	Moderate	At risk
Ardnahinch_010	IE_SW_19A200870	River	Good	Under review
Ardra More_010	IE_SW_19A220720	River	Good	Not at risk
Blarney_010	IE_SW_19B020500	River	Moderate	At risk
Bride (Lee)_050	IE_SW_19B041600	River	Good	Under review
Butlerstown_010	IE_SW_19B060200	River	Good	Not at risk
Butlerstown _020	IE_SW_19B060500	River	Good	Under review
Butlerstown _030	IE_SW_19B060800	River	Moderate	At risk
Bride (Cork City)_010	IE_SW_19B140110	River	Moderate	At risk
Bride (Cork City)_020	IE_SW_19B140300	River	Poor	At risk
Curragheen (Cork City)_010	IE_SW_19C120740	River	Moderate	At risk
Dripsey_020	IE_SW_19D060400	River	High	Under review
Dungourney_010	IE_SW_19D070500	River	Good	Under review
Dungourney_020	IE_SW_19D070700	River	Poor	At risk
Farrannamanagh_010	IE_SW_19F110740	River	Good	Not at risk
Glashaboy (Lough Mahon)_020	IE_SW_19G010400	River	Good	Under review
Glashaboy (Lough Mahon)_030	IE_SW_19G010600	River	Good	Not at risk
Glasheen (Cork City)_010	IE_SW_19G040700	River	Poor	At risk
Glennamought Trib Bride_010	IE_SW_19G880990	River	Moderate	Under review
Hilltown_010	IE_SW_19H050470	River	Good	Under review
Kilnaglery_010	IE_SW_19K620850	River	Good	Under review
Knocknamadderee_010	IE_SW_19K630910	River	Good	Under review
Lee (Cork)_080	IE_SW_19L030600	River	Good	Not at risk
Lee (Cork)_090	IE_SW_19L030800	River	Good	Not at risk
Martin_010	IE_SW_19M010200	River	Moderate	At risk
Martin _020	IE_SW_19M010300	River	Good	Not at risk
Martin _030	IE_SW_19M010400	River	Good	At risk
Martin _040	IE_SW_19M010600	River	Moderate	At risk
Moneygurney_010	IE_SW_19M300900	River	Good	Under review

Owenboy (Cork)_010	IE_SW_19O010400	River	Moderate	At risk
Owenboy (Cork)_020	IE_SW_19O010800	River	Moderate	At risk
Owenboy (Cork)_030	IE_SW_19O011000	River	Moderate	Under review
Owenboy (Cork)_040	IE_SW_19O011400	River	Moderate	At risk
Owennacurra_010	IE_SW_19O030050	River	Good	At risk
Owennacurra _020	IE_SW_19O030220	River	High	Not at risk
Owennacurra _030	IE_SW_19O030400	River	Good	Not at risk
Owennacurra _040	IE_SW_19O030500	River	Moderate	At risk
Shournagh_020	IE_SW_19S010200	River	High	Not at risk
Shournagh_030	IE_SW_19S010300	River	Moderate	At risk
Shournagh _040	IE_SW_19S010500	River	Good	At risk
Shanagarry_010	IE_SW_19S270790	River	Good	Under review
Templebodan_010	IE_SW_19T010100	River	Good	Not at risk
Two Pot (Cork City)_010	IE_SW_19T050890	River	Moderate	At risk
Tibbotstown_010	IE_SW_19T250870	River	Good	Under review
Womanagh_020	IE_SW_19W011300	River	Moderate	At risk
Minane (Cork)_010	IE_SW_20M010200	River	Good	Under review
Stick_010	IE_SW_20S030800	River	Good	Not at risk
Inniscarra Reservoir	IE_SW_19_138	Lake	Good	Not at risk
Cuskinny Lake	IE_SW_060_0200	Transitional	Bad	Under review
North Channel Great Island	IE_SW_060_0300	Transitional	Moderate	At risk
Slatty Bridge_ Fota Island	IE_SW_060_0600	Transitional	Unassigned	Under review
Glashaboy Estuary	IE_SW_060_0800	Transitional	Bad	At risk
Lee (Cork) Estuary Lower	IE_SW_060_0900	Transitional	Moderate	At risk
Lee (Cork) Estuary Upper	IE_SW_060_0950	Transitional	Moderate	At risk
Lough Beg / Curraghbinny	IE_SW_060_1100	Transitional	Good	Under review
Rostellan Lake	IE_SW_060_0100	Transitional	Moderate	Under review
Owenboy Estuary	IE_SW_060_1200	Transitional	Moderate	At risk
Owenacurra Estuary	IE_SW_060_0400	Transitional	Moderate	At risk
Lough Mahon (Harper's Island)	IE_SW_060_0700	Transitional	Moderate	At risk
Lough Mahon	IE_SW_060_0750	Transitional	Moderate	At risk
Outer Cork Harbour	IE_SW_050_0000	Coastal	Moderate	At risk
Raffeen Lake, Shanbally	IE_SW_060_1000	Coastal	Unassigned	Under review
Cork Harbour	IE_SW_060_0000	Coastal	Moderate	At risk

Appendix C Third Schedule Invasive Species Recorded within CWS Core Study Area

Common Name	Scientific Name	Recorded in last five years? (Y/N)[10]
American mink	*Mustela/Neovison vison*	Y
Canada goose	*Branta canadensis*	N
Common carp	*Cyprinus carpio*	N
Coypu	*Myocastor coypus*	N
Grey squirrel	*Sciurus carolinensis*	N
Greylag goose	*Anser anser*	N
Harlequin ladybird	*Harmonia axyridis*	Y
Japanese skeleton shrimp	*Caprella mutica*	N
Muntjac deer	*Muntiacus reevesi*	N
Muskrat	*Ondatra zibethicus*	N
Ruddy duck	*Oxyura jamaicensis*	N
Stalked/leathery sea squirt	*Styela clava*	Y
American skunk-cabbage	*Lysichiton americanus*	Y
Brazilian giant-rhubarb	*Gunnera manicata*	Y
Cord-grasses	*Spartina spp.*	Y
Curly waterweed	*Lagarosiphon major*	N
Giant hogweed	*Heracleum mantegazzianum*	N
Giant knotweed	*Fallopia sachalinensis*	N
Giant-rhubarb	*Gunnera tinctoria*	Y
Himalayan/Indian balsam	*Impatiens glandulifera*	Y
Himalayan knotweed	*Persicaria wallichii*	Y
Hottentot-fig	*Carpobrotus edulis*	Y
Japanese knotweed	*Fallopia japonica*	Y
Parrot's feather	*Myriophyllum aquaticum*	N

[10] Records from the National Biodiversity Data Centre. Available at: https://maps.biodiversityireland.ie/Map (Accessed December 2023)

Rhododendron	*Rhododendron ponticum*	Y
Sea-buckthorn	*Hippophae rhamnoides*	Y
Spanish bluebell	*Hyacinthoides hispanica*	Y
Three-cornered leek	*Allium triquetrum*	Y
Water fern	*Azolla filiculoides*	N
Waterweeds	*Elodea spp.*	Y
Wireweed	*Sargassum muticum*	Y

Appendix B European Sites in the ZoI of the Draft CWS

Table B1: European Sites and their conservation objectives and qualifying interests.

European site name and code[37]	Distance of site from the Draft CWS	Conservation Objectives and Qualifying Interests (*=priority habitat)
Special Areas of Conservation (SAC)		
Great Island Channel SAC (001058)	Direct distance: within study area Hydrological distance: within study area	**To maintain or restore the favourable conservation condition of the Annex I habitats for which the SAC has been selected.** **Annex I Habitats:** Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
Blackwater River (Cork/Waterford) SAC (002170)	Direct distance: 2.5km north Hydrological distance: 37.3km via the Celtic Sea	**To maintain or restore the favourable conservation condition of the Annex I habitats and Annex II species for which the SAC has been selected.** **Annex I Habitats:** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Taxus baccata* woods of the British Isles [91J0] **Annex II Species:** Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029] White-clawed Crayfish (*Austropotamobius pallipes*) [1092] Sea Lamprey (*Petromyzon marinus*) [1095] Brook Lamprey (*Lampetra planeri*) [1096] River Lamprey (*Lampetra fluviatilis*) [1099] Twaite Shad (*Alosa fallax fallax*) [1103] Salmon (*Salmo salar*) [1106] Otter *(Lutra lutra)* [1355] Killarney Fern (*Trichomanes speciosum*) [1421]
Ballymacoda (Clonpriest and	Direct distance: 10km east	**To maintain or restore the favourable conservation condition of the Annex I habitats for which the SAC has been selected.**

[37] It should be noted that these are the initial European sites that are considered to be within the ZoI of the Draft CWS, however, as the Draft CWS progresses and more information becomes available, the European sites considered to be in the ZoI may change.

European site name and code[37]	Distance of site from the Draft CWS	Conservation Objectives and Qualifying Interests (*=priority habitat)
Pillmore) SAC (000077)	Hydrological distance: 16km downstream via the Womanagh River	**Annex I Habitats:** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] *Salicornia* and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
The Gearagh SAC (000108)	Direct distance: 14.9km west Hydrological distance: 23.1km upstream via the River Lee	**To maintain or restore the favourable conservation condition of the Annex I habitats and Annex II species for which the SAC has been selected.** **Annex I Habitats:** Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation [3270] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] **Annex II Species:** Otter *(Lutra lutra)* [1355]
Special Protection Areas (SPA)		
Cork Harbour SPA (004030)	Direct distance: within study area Hydrological distance: within study area	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Shelduck (*Tadorna tadorna*) [A048] Wigeon (*Mareca penelope*) [A050] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Pintail (*Anas acuta*) [A054] Shoveler (*Spatula clypeata*) [A056] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141]

European site name and code[37]	Distance of site from the Draft CWS	Conservation Objectives and Qualifying Interests (*=priority habitat)
		Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Common Tern (*Sterna hirundo*) [A193] Wetland and Waterbirds [A999]
Ballycotton Bay SPA (004022)	Direct distance: 3.7km southeast Hydrological distance: 4.3km downstream via the Shanagarry River	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Turnstone (*Arenaria interpres*) [A169] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Wetland and Waterbirds [A999]
Sovereign Islands SPA (004124)	Direct distance: 9.3km southwest Hydrological distance: 19.2km via the Celtic Sea	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Cormorant (*Phalacrocorax carbo*) [A017]
Ballymacoda Bay SPA (004023)	Direct distance: 10km east Hydrological distance: 15.2km downstream via	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Wigeon (*Mareca penelope*) [A050] Teal (*Anas crecca*) [A052] Ringed Plover (*Charadrius hiaticula*) [A137]

European site name and code[37]	Distance of site from the Draft CWS	Conservation Objectives and Qualifying Interests (*=priority habitat)
	the Womanagh River	Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Wetland and Waterbirds [A999]
Blackwater Estuary SPA (004028)	Direct distance: 14.5km east Hydrological distance: 37.3km via the Celtic Sea	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Wigeon (*Mareca penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999]
Blackwater Callows SPA (004094)	Direct distance: 14.5km north Hydrological distance: 71.4km via the Celtic Sea and upstream via the Blackwater River	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Mareca penelope*) [A050] Teal (*Anas crecca*) [A052] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999]
The Gearagh SPA (004109)	Direct distance: 16.2km west Hydrological distance: 24.4km	**To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Wigeon (*Mareca penelope*) [A050] Teal (*Anas crecca*) [A052]

European site name and code[37]	Distance of site from the Draft CWS	Conservation Objectives and Qualifying Interests (*=priority habitat)
	upstream via the River Lee	Mallard (*Anas platyrhynchos*) [A053] Coot (*Fulica atra)* [A125] Wetland and Waterbirds [A999]
Courtmacsherry Bay SPA (004219)	Direct distance: 14.6km west Hydrological distance: 35.27km upstream via the Celtic Sea	**To maintain the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.** Great Northern Diver (*Gavia immer*) [A003] Shelduck (*Tadorna tadorna*) [A048] Red-breasted Merganser (*Mergus serrator*) [A069] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Wigeon (*Mareca penelope*) [A855] Wetland and Waterbirds [A999]

Appendix C List of Habitats and Species

Table C1: Protected Habitats and their Status (Condition and Trend). Water dependency (Mayes, 2008) is GW (groundwater), MW marine water), SW (surface water). – is used where there is no specified water dependency.

Habitat Code	Habitat Name	Overall Conservation Status	Water Dependency
1130	Estuaries	Unfavourable-Inadequate	SW, MW
1140	Mudflats and sandflats not covered by seawater at low tide	Unfavourable-Inadequate	MW
1220	Perennial vegetation of stony banks	Unfavourable-Inadequate	MW
1310	*Salicornia* and other annuals colonising mud and sand	Favourable	MW
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Unfavourable-Inadequate	GW, MW
1410	Mediterranean salt meadows (*Juncetalia maritimi*)	Unfavourable-Inadequate	GW, MW
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Unfavourable-Inadequate	SW, GW
3270	Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation	Favourable	SW, GW
91A0	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Unfavourable-Bad	-
91E0	*Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	Unfavourable-Bad	SW, GW
91J0	**Taxus baccata* woods of the British Isles	Unfavourable-Bad	-

Table C2: Protected Species and their Status (Condition and Trend). Water dependency (Mayes, 2008) is GW (groundwater), MW marine water), SW (surface water).

Species Code	Species Name	Overall Conservation Status	Water Dependency
1029	Freshwater Pearl Mussel (*Margaritifera margaritifera*)	Unfavourable-Bad	SW
1092	White-clawed Crayfish (*Austropotamobius pallipes*)	Unfavourable-Bad	SW, GW
1095	Sea Lamprey (*Petromyzon marinus*)	Bad	SW, MW
1096	Brook Lamprey (*Lampetra planeri*)	Favourable	SW
1099	River Lamprey (*Lampetra fluviatilis*)	Unknown[1]	SW
1103	Twaite Shad (*Alosa fallax fallax*)	Bad	SW, MW
1106	Atlantic Salmon (*Salmo salar*)	Inadequate	SW, MW
1355	Otter (*Lutra lutra*)	Favourable	SW, MW
1421	Killarney Fern (*Trichomanes speciosum*)	Favourable	SW

[1] In the previous reporting period this species was assigned a Favourable conservation status. The change to Unknown is not considered to represent a downgrade in status (NPWS, 2019c).

Table C3: Qualifying interest bird species and their Birds of Conservation Concern in Ireland 4 (Gilbert et al., 2021) listing.

Species Code	Species Name	BOCCI4 List
A004	Little Grebe (*Tachybaptus ruficollis*)	Green
A005	Great Crested Grebe (*Podiceps cristatus*)	Amber
A017	Cormorant (*Phalacrocorax carbo*)	Amber
A028	Grey Heron (*Ardea cinerea*)	Green
A048	Shelduck (*Tadorna tadorna*)	Amber
A052	Teal (*Anas crecca*)	Amber
A054	Pintail (*Anas acuta*)	Amber
A069	Red-breasted Merganser (*Mergus serrator*)	Amber
A130	Oystercatcher (*Haematopus ostralegus*)	Red
A140	Golden Plover (*Pluvialis apricaria*)	Red
A141	Grey Plover (*Pluvialis squatarola*)	Red
A142	Lapwing (*Vanellus vanellus*)	Red
A149	Dunlin (*Calidris alpina*)	Red
A156	Black-tailed Godwit (*Limosa limosa*)	Red
A157	Bar-tailed Godwit (*Limosa lapponica*)	Red
A160	Curlew (*Numenius arquata*)	Red
A162	Redshank (*Tringa totanus*)	Red
A179	Black-headed Gull (*Chroicocephalus ridibundus*)	Amber
A182	Common Gull (*Larus canus*)	Amber
A183	Lesser Black-backed Gull (*Larus fuscus*)	Amber
A193	Common Tern (*Sterna hirundo*)	Amber
A855	Wigeon (*Mareca penelope*)	Amber
A857	Shoveler (*Spatula clypeata*)	Red
A999	Wetland and Waterbirds	N/A

Appendix D WFD Waterbodies within Draft CWS Core Study Area

Name	Code	Waterbody Type	WFD Status 2016-2021	WFD Risk Rating
Aughnaboy (Cork)_010	IE_SW_19A020300	River	Moderate	At risk
Ardnahinch_010	IE_SW_19A200870	River	Good	Under review
Ardra More_010	IE_SW_19A220720	River	Good	Not at risk
Blarney_010	IE_SW_19B020500	River	Moderate	At risk
Bride (Lee)_050	IE_SW_19B041600	River	Good	Under review
Butlerstown_010	IE_SW_19B060200	River	Good	Not at risk
Butlerstown_020	IE_SW_19B060500	River	Good	Under review
Butlerstown_030	IE_SW_19B060800	River	Moderate	At risk
Bride (Cork City)_010	IE_SW_19B140110	River	Moderate	At risk
Bride (Cork City)_020	IE_SW_19B140300	River	Poor	At risk
Curragheen (Cork City)_010	IE_SW_19C120740	River	Moderate	At risk
Dripsey_020	IE_SW_19D060400	River	High	Under review
Dungourney_010	IE_SW_19D070500	River	Good	Under review
Dungourney_020	IE_SW_19D070700	River	Poor	At risk
Farrannamanagh_010	IE_SW_19F110740	River	Good	Not at risk
Glashaboy (Lough Mahon)_020	IE_SW_19G010400	River	Good	Under review
Glashaboy (Lough Mahon)_030	IE_SW_19G010600	River	Good	Not at risk
Glasheen (Cork City)_010	IE_SW_19G040700	River	Poor	At risk
Glennamought Trib Bride_010	IE_SW_19G880990	River	Moderate	Under review
Hilltown_010	IE_SW_19H050470	River	Good	Under review
Kilnaglery_010	IE_SW_19K620850	River	Good	Under review
Knocknamadderee_010	IE_SW_19K630910	River	Good	Under review
Lee (Cork)_080	IE_SW_19L030600	River	Good	Not at risk
Lee (Cork)_090	IE_SW_19L030800	River	Good	Not at risk
Martin_010	IE_SW_19M010200	River	Moderate	At risk
Martin_020	IE_SW_19M010300	River	Good	Not at risk
Martin_030	IE_SW_19M010400	River	Good	At risk
Martin_040	IE_SW_19M010600	River	Moderate	At risk
Moneygurney_010	IE_SW_19M300900	River	Good	Under review
Owenboy (Cork)_010	IE_SW_19O010400	River	Moderate	At risk

Name	Code	Waterbody Type	WFD Status 2016-2021	WFD Risk Rating
Owenboy (Cork)_020	IE_SW_19O010800	River	Moderate	At risk
Owenboy (Cork)_030	IE_SW_19O011000	River	Moderate	Under review
Owenboy (Cork)_040	IE_SW_19O011400	River	Moderate	At risk
Owennacurra_010	IE_SW_19O030050	River	Good	At risk
Owennacurra_020	IE_SW_19O030220	River	High	Not at risk
Owennacurra_030	IE_SW_19O030400	River	Good	Not at risk
Owennacurra_040	IE_SW_19O030500	River	Moderate	At risk
Shournagh_020	IE_SW_19S010200	River	High	Not at risk
Shournagh_030	IE_SW_19S010300	River	Moderate	At risk
Shournagh_040	IE_SW_19S010500	River	Good	At risk
Shanagarry_010	IE_SW_19S270790	River	Good	Under review
Templebodan_010	IE_SW_19T010100	River	Good	Not at risk
Two Pot (Cork City)_010	IE_SW_19T050890	River	Moderate	At risk
Tibbotstown_010	IE_SW_19T250870	River	Good	Under review
Womanagh_020	IE_SW_19W011300	River	Moderate	At risk
Minane (Cork)_010	IE_SW_20M010200	River	Good	Under review
Stick_010	IE_SW_20S030800	River	Good	Not at risk
Inniscarra Reservoir	IE_SW_19_138	Lake	Good	Not at risk
Cuskinny Lake	IE_SW_060_0200	Transitional	Bad	Under review
North Channel Great Island	IE_SW_060_0300	Transitional	Moderate	At risk
Slatty Bridge_ Fota Island	IE_SW_060_0600	Transitional	Unassigned	Under review
Glashaboy Estuary	IE_SW_060_0800	Transitional	Bad	At risk
Lee (Cork) Estuary Lower	IE_SW_060_0900	Transitional	Moderate	At risk
Lee (Cork) Estuary Upper	IE_SW_060_0950	Transitional	Moderate	At risk
Lough Beg / Curraghbinny	IE_SW_060_1100	Transitional	Good	Under review
Rostellan Lake	IE_SW_060_0100	Transitional	Moderate	Under review
Owenboy Estuary	IE_SW_060_1200	Transitional	Moderate	At risk
Owenacurra Estuary	IE_SW_060_0400	Transitional	Moderate	At risk
Lough Mahon (Harper's Island)	IE_SW_060_0700	Transitional	Moderate	At risk
Lough Mahon	IE_SW_060_0750	Transitional	Moderate	At risk
Outer Cork Harbour	IE_SW_050_0000	Coastal	Moderate	At risk
Raffeen Lake, Shanbally	IE_SW_060_1000	Coastal	Unassigned	Under review
Cork Harbour	IE_SW_060_0000	Coastal	Moderate	At risk

Appendix E Third Schedule Invasive Species Recorded within CWS Core Study Area

Common Name	Scientific Name	Recorded in last five years? (Y/N)[38]
American mink	*Mustela/Neovison vison*	Y
Canada goose	*Branta canadensis*	N
Common carp	*Cyprinus carpio*	N
Coypu	*Myocastor coypus*	N
Grey squirrel	*Sciurus carolinensis*	N
Greylag goose	*Anser anser*	N
Harlequin ladybird	*Harmonia axyridis*	Y
Japanese skeleton shrimp	*Caprella mutica*	N
Muntjac deer	*Muntiacus reevesi*	N
Muskrat	*Ondatra zibethicus*	N
Ruddy duck	*Oxyura jamaicensis*	N
Stalked/leathery sea squirt	*Styela clava*	Y
American skunk-cabbage	*Lysichiton americanus*	Y
Brazilian giant-rhubarb	*Gunnera manicata*	Y
Cord-grasses	*Spartina* spp.	Y
Curly waterweed	*Lagarosiphon major*	N
Giant hogweed	*Heracleum mantegazzianum*	N
Giant knotweed	*Fallopia sachalinensis*	N
Giant-rhubarb	*Gunnera tinctoria*	Y
Himalayan/Indian balsam	*Impatiens glandulifera*	Y
Himalayan knotweed	*Persicaria wallichii*	Y
Hottentot-fig	*Carpobrotus edulis*	Y
Japanese knotweed	*Reynoutria japonica*	Y
Parrot's feather	*Myriophyllum aquaticum*	N
Rhododendron	*Rhododendron ponticum*	Y
Sea-buckthorn	*Hippophae rhamnoides*	Y
Spanish bluebell	*Hyacinthoides hispanica*	Y
Three-cornered leek	*Allium triquetrum*	Y
Water fern	*Azolla filiculoides*	N
Waterweeds	*Elodea* spp.	Y
Wireweed	*Sargassum muticum*	Y

[38] Records from the National Biodiversity Data Centre. Available at: https://maps.biodiversityireland.ie/Map (Accessed December 2023)