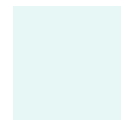


Report: May 2026

Galway Wastewater Strategy

**Strategic Environmental
Assessment:**

Environmental Report



Tionscald Éireann
Project Ireland
2040



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2040



Draft Galway Wastewater Strategy	
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This report has been prepared by Ryan Hanley Stantec on behalf of its client to whom this report is addressed ('Client') in connection with the project described in this report and considers the Client's particular instructions and requirements. This report was prepared in accordance with the professional services appointment under which Ryan Hanley Stantec were appointed by its Client. This report is not intended for and should not be relied on by any third party (i.e. parties other than the Client). Stantec accepts no duty or responsibility (including in negligence) to any party other than the Client and disclaims all liability of any nature whatsoever to any such party in respect of this report.

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1. Introduction and Background

1.1 Uisce Éireann

Uisce Éireann (UÉ) is Ireland's national regulated water utility. Under the Water Services Act 2013 (No. 6 of 2013), UÉ is responsible for ensuring that all 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. UÉ aims to support Ireland's social and economic growth in a sustainable manner through appropriate investment in water services and is committed to protecting the environment in all their activities.

UÉ is regulated by:

- The Commission for Regulation of Utilities (CRU), which is the independent regulator charged with protecting the interests of the customer. The CRU also approves appropriate funding to enable the utility to deliver the required services to specified standards in an efficient manner.
- The Environmental Protection Agency (EPA), which sets standards and enforces compliance with EU and National Regulations for drinking water supply and wastewater discharge to water bodies. The EPA liaises with the Health Services Executive in matters of public health.

The Water Services Strategic Plan 2050¹ (WSSP) sets out UÉ's long-term vision, objectives and how they are to be achieved over the next 25 years. UÉ's vision is: "A sustainable Ireland where water is respected and protected, for the planet and all the lives it supports". One of the WSSP's strategic aims is to "Protect and restore our environment" and includes an action to "work with regulators and stakeholders to develop a Wastewater Strategy Framework". The approach considers the management of all related wastewater assets – including wastewater treatment plants (WwTPs), collection networks, pumping stations, overflows, and assets related to sludge management. Key challenges and strategic objectives outlined in the WSSP cascade down to inform the draft Galway Wastewater Strategy (GWS).

1.2 Galway Wastewater Strategy

The four UÉ wastewater agglomerations included as part of the draft Galway Wastewater Strategy GWS (GWS) study area are Galway City (Mutton Island), Athenry, Claregalway and Moycullen, which encompass six UÉ wastewater collection networks. Mutton Island WwTP is the largest WwTP in the region and handles the wastewater from the Galway Metropolitan Area. The GWS study area contains over 50 UÉ and private Wastewater Pumping Stations (WWPSs) to convey flows for treatment at the relevant WwTPs. There are 29 stormwater overflows (SWOs) in the draft GWS Study Area. The area covered by the draft Galway Wastewater Strategy (GWS Study Area) is shown in **Figure 1-1**.

¹ Uisce Éireann, July 2025. Water Services Strategic Plan 2050. Available at: [Water Services Strategic Plan 2050](#). Accessed March 2026.

Galway has recently undergone significant economic expansion, with projections indicating further population growth accompanied by planned urban expansion, housing delivery targets, and broader economic growth. This will lead to increased demands placed on the network and treatment works over the next 50 years. Population increase in the Galway Metropolitan Area (GMA) has placed increasing pressure on wastewater treatment capacity, effluent discharge compliance, and associated sewerage networks at wastewater treatment plants. These pressures have also affected receiving waters and are expected to intensify in line with continued growth. In addition to these demands, changes to weather patterns caused by climate change are likely to lead to drier summers, wetter winters and more intense rainfall in Ireland. This will mean that networks will need to handle periods of more intense, and greater surface runoff. As a coastal location, sea level rise in Galway must also be considered. Changes in European policy and legislation, such as the recast Urban Wastewater Treatment Directive means that WwTPs in the Galway region will need to be managed to ensure compliance with new regulatory requirements.

The draft GWS is being developed to ensure resilient wastewater services in the Galway region through to 2080, considering short-, medium-, and long-term needs (2040, 2055, 2080) to create a strategy that can adapt over time.

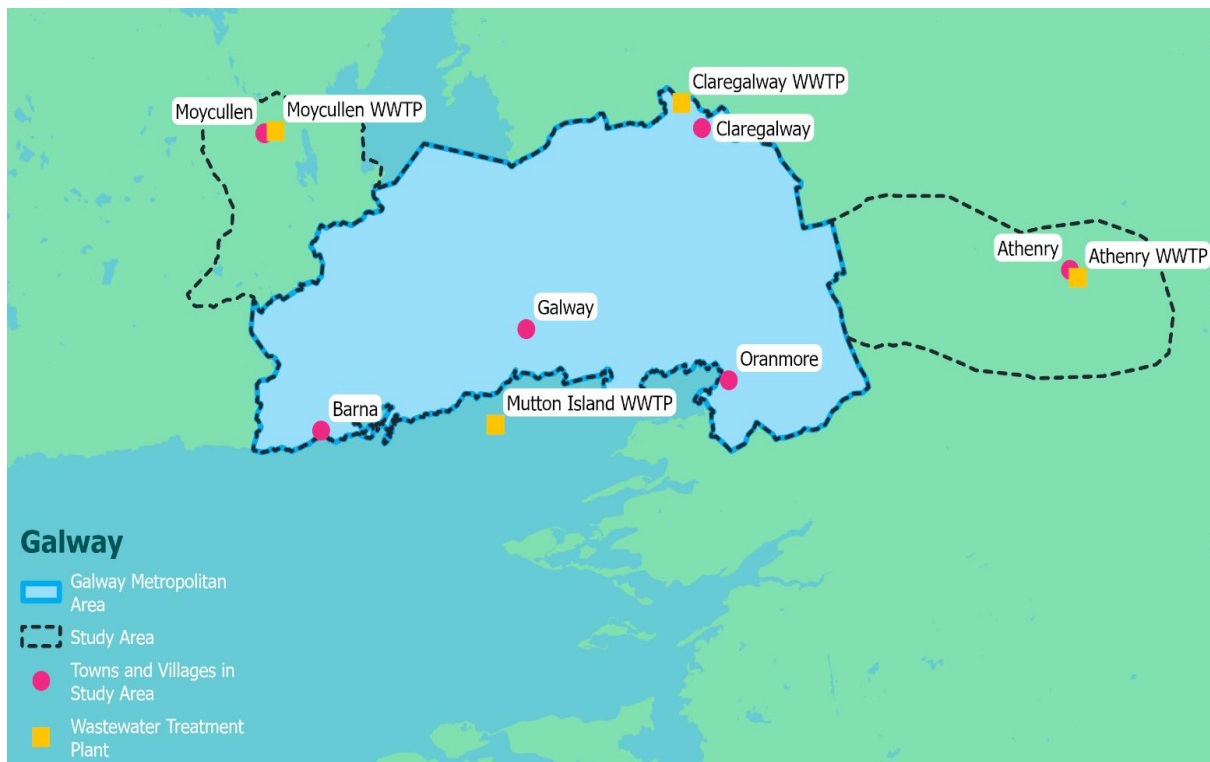


Figure 1-1: Draft GWS Study Area (outlined by dashed black line), which includes Moycullen and Athenry. Dashed blue line outlines the Galway Metropolitan Area (GMA).

1.3 Legislative Requirement of this Report

This Strategic Environmental Assessment (SEA) Environmental Report has been prepared to document the environmental assessment of the draft GWS. A SEA screening has confirmed that the draft GWS requires a mandatory SEA.

Council Directive 2001/42/EC of the European Parliament and of the Council of 27th June 2001 on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) established the statutory requirement for SEA as part of the development of certain plans and programmes. The SEA Directive is transposed in Ireland under the European Communities (EC) (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004), as amended. The European Union (Land Use Planning – Strategic Environmental Assessment) Regulations 2025 (SI. 456/2025) provide a specific legislative framework for SEA in the land-use planning sector, replacing earlier planning-specific SEA regulations and introducing updated procedures in line with the Planning and Development Act 2024.

The overall objective of the SEA Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes. As set out in Article 1 of the SEA Directive, a SEA is required to:

"Provide for a high level of protection to the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development..."

According to Article 2 of the Directive, "plans and programmes" includes those co-financed by the European Community, and those which are:

- Subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government
- Required by legislative, regulatory or administrative provisions

Under Article 3(2), an environmental assessment:

"...shall be carried out for all plans and programmes, (a) which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in Annexes I and II to Directive 85/337/EEC34."

Accordingly, the draft GWS falls within the scope of Article 3(2) and is therefore subject to the requirement for an environmental assessment.

1.4 The SEA Process

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. The SEA process is undertaken in four stages, as summarised in **Table 1-1**.

The first two stages – Stage 1 Screening (deciding whether SEA is required or not) and Stage 2 Scoping (establishing the spatial and temporal scope and SEA Topics and their Strategic Environmental Objectives) – have been completed for the draft GWS. The outputs of each of these stages – the SEA Screening Statement and the SEA Scoping Report – are available on the UÉ website. The draft GWS is currently at Stage 3 - Identification, Prediction, Evaluation and Mitigation of Potential Effects.

Table 1-1 Stages of SEA Assessment

Stage	Purpose and Requirements	Output
Stage 1: Screening	Prior to starting the SEA process, a plan or programme undergoes 'screening' to determine whether it requires SEA (also if SEA is to be undertaken on a voluntary basis).	SEA Screening Statement – UÉ (as the responsible authority) determined that SEA would be undertaken for the draft GWS.
Stage 2: Scoping	Consideration of the context and objectives of the SEA, provides information on baseline data, identifies relevant environmental issues and trends, and defines the parameters of the scope of the SEA for the purpose of consultation.	SEA Scoping Report – which sets the geographical and temporal scope of the draft GWS and SEA, the baseline environment, SEA Topics, and Strategic Environmental Objectives to inform the Stage 3 assessment. Formal statutory consultation was carried out for the draft GWS between 26 September to 20 November 2024.
Stage 3: Identification, Prediction, Evaluation and Mitigation of Potential Effects Current Stage	Within the context and parameters identified at the Scoping Stage, identification and evaluation of likely significant effects of the draft GWS are carried out, including consideration of alternatives and determination of measures to mitigate and monitor residual effects.	Environmental Report (SEA of the draft GWS) (this report). Consultation will take place alongside the draft GWS consultation.

<p>Stage 4: Consultation, Revision and Post Adoption</p>	<p>In accordance with Article 11 of European Communities (Environmental Assessment of Certain Plans and Programmes) (S.I. No. 435 of 2004), environmental authorities and stakeholders must be notified and consulted so that they may make a submission or observation to UÉ in relation to the SEA Environmental Report or the draft GWS.</p> <p>Changes to the draft GWS considering responses may be made following public and stakeholder consultation</p> <p>A statement on how the SEA and consultation process has influenced the final GWS is required.</p> <p>An environmental monitoring programme is also required. This will also aid any future review / revision of the GWS and the SEA.</p>	<p>SEA Statement.</p> <p>Implementation of the monitoring programme.</p>
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The SEA process should influence and improve its associated plan. The process involves assessing the likely significant effects on the environment of implementing the plan and considering reasonable alternatives for achieving plan objectives. Combined and cumulative effects of the plan as a whole and with other plans and programmes are also included as part of the assessment. The SEA Regulations set out specific requirements for consultation with Environmental Authorities. The SEA Environmental Report and consultation responses must be considered during plan finalisation and implementation monitoring.

1.5 Appropriate Assessment (AA)

In addition to compliance with the SEA Directive, the preparation and implementation of the draft GWS must comply with the requirements of the EU Habitats Directive 92/43/EEC and the EU Birds Directive 2009/147/EC. The EU Habitats and Birds Directives are transposed in Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (as amended). Under the EU Habitats Directive, areas which support habitats and species of conservation importance which are designated for the conservation of flora, fauna, and habitats of European importance (Annex I habitats and Annex II animal and plant species) are referred to as Special Areas of Conservation (SACs). Under the EU Birds Directive, sites which are designated

for the protection and conservation of bird species and their habitats of European importance are referred to as Special Protected Areas (SPAs). Sites protected under the Habitats and Birds Directives form part of Natura 2000, a network of protected areas (European sites) throughout the European Union. The Directives require that if a plan, policy or programme is likely to have a significant effect on one or more European sites (that is, a Special Area of Conservation (SAC) or Special Protection Area (SPA), either alone or in combination with other schemes, plans or projects, then it must be subject to Appropriate Assessment.

An initial AA screening has been undertaken for the draft GWS to determine if it is likely to have a significant adverse effect on a European site, either individually or in combination with other plans and/or projects. The AA screening concluded that without mitigation, the draft GWS is likely to have a significant effect on several European Sites. In accordance with the precautionary principle (European Commission, 2000), and because operational effects of the plan are not yet at options stage, 11 European sites have been 'screened in' for further assessment. Therefore, a Stage 2 Appropriate Assessment has been undertaken. This is presented in a Natura Impact Statement (NIS) to fully inform the AA determination to be undertaken by UÉ.

There is a degree of overlap between the requirements of SEA and AA and in accordance with best practice, an integrated approach is being applied between the development of the draft GWS, the SEA and the AA. The SEA will consider of the findings of the AA in relation to potential effects and mitigation relevant for European sites and will also cover aspects of biodiversity, habitats and species that are not required to be covered in the AA.

2. Development of the Draft Galway Wastewater Strategy

2.1 Draft GWS Aims and Objectives

The draft GWS aims to support customers, communities, and the wider economy; protect and enhance the natural environment; and deliver resilient, future-ready wastewater services. The following key aims have been developed for the draft GWS:

- 1. Comply with Legislation** - Develop a sustainable wastewater strategy for the GWS study area which achieves compliance with current European and National legislation.
- 2. Meet Growth Demands** - Identify ways of meeting the current and future growth demands of the GWS study area, considering Development Plans, the National Planning Framework (NPF), Regional Spatial and Economic Strategy (RSES), and anticipated development up to 2080.
- 3. Safeguard the environment and protect public health** - Adopt a strategy which protects and enhances the environment and public health, consistent with UÉ Water Services Strategic Plan (WSSP) and the Government of Ireland Water Services Policy Statement (WSPS).
- 4. Adapt to Climate Change** - Ensure the strategy is resilient to the likely effects from climate change.
- 5. Adaptable** - Develop an adaptable strategy that can respond to different future scenarios, ensuring that the strategy remains effective in the long-term.
- 6. Develop a delivery timeline** - Produce a prioritised delivery timeline that translates the draft GWS recommendations into clearly timed, actionable projects with measurable outcomes.

2.2 Strategic Challenges

The draft GWS aims to address the following strategic challenges:

Growing Population and Economy: Ireland has the third fastest growing population in Europe, and our economy is continuing to expand. Greater Galway is not only a major regional metropolitan hub but is also identified as a key driver of Ireland's economic, environmental, and social development under the National Planning Framework (NPF²) and the Regional Spatial and Economic Strategy (RSES³) 2020-2032. The draft GWS has been aligned with these planning frameworks, and with local development plans for Galway City and County. The draft GWS has explored growth pressures by modelling future wastewater generation across multiple growth scenarios, extending to 2080. **Section 5** of this report outlines the key plans that have informed the draft GWS.

Climate change: Climate Change impacts include wetter winters, more intense rainfall events, increased storm surges, rising sea levels, changes in river flows, as well as drier summers, warmer temperatures, and periods of drought. The Mutton Island (Galway City) agglomeration is prone to

² Rialtas na hÉireann. 2018. Project Ireland 2040. National Planning Framework. Available at: [Project-Ireland-2040-NPF.pdf](#). Accessed January 2026.

³ Northern and Western Regional Assembly, 2020. Regional spatial and economic strategy 2020-2032. Available at: [REGIONAL SPATIAL AND ECONOMIC STRATEGY 2020-2032](#). Accessed January 2026.

tidal influence due to its location on the coast. Rising sea levels affect coastal infrastructure and can lead to increased flood risks at WwTPs.

Legislation and Policy: European policy and legislation significantly influence how UÉ operate, and they are continuously evolving. In the development of a regional strategy which will span decades, it must be recognised that legislation and regulation will change over time. **Section 5** of this report outlines some of the key pieces of legislation that have informed the draft GWS.

The Environment and Biodiversity: Ireland is significant environmental and biodiversity challenges, and the scale and speed of response may be insufficient to meet long-term EU and national environmental objectives. UÉ's biodiversity action plan (BAP) outlines its commitment to protecting and enhancing biodiversity across its operations. The BAP closely aligns with Ireland's Climate Action Plan by promoting nature-based solutions that simultaneously support biodiversity conservation and climate resilience. The draft GWS seeks to integrate biodiversity considerations into water and wastewater infrastructure management, promote nature-based solutions, and minimise environmental impacts.

Economic conditions: Economic conditions can in turn impact on the delivery of water services. For examples, economic downturn can limit the availability of funding for critical infrastructure projects and maintenance needs. Additionally, international or national events can have knock-on implications on supply chains and energy costs. This can impact the availability of materials, products and chemicals. Adaptive planning principles underpin the GWS implementation plan, ensuring it remains flexible to deal with risks such as funding constraints and geopolitical uncertainty.

3. Consultation

3.1 Stakeholder Engagement and Consultation

According to Article 5(4) of the SEA Directive, statutory environmental authorities (referred to in Article 6(3)) must be consulted when deciding on the scope and level of detail of the information which must be included in the SEA Environmental Report. In accordance with Article 11 of European Communities (Environmental Assessment of Certain Plans and Programmes) (S.I. No. 435 of 2004), environmental authorities and stakeholders must be notified and consulted so that they may make a submission or observation in relation to the SEA Environmental Report or the draft GWS.

Meaningful engagement with the public, local authorities, environmental regulators, industry, and community organisations supports UÉ’s efforts to develop a strategy which delivers for its customers. While UÉ is responsible for delivering the draft GWS, active participation from the public and key stakeholders is crucial to its development and long-term success. Wastewater drainage systems are fundamentally complex, with numerous interactions and cumulative effects.

Engagement for the draft GWS was carefully planned and delivered in stages, in **Figure 3-1**. The consultation approach involves two key stages in the development of the draft GWS, as follows:

- Public Consultation 1 – an eight-week consultation seeking feedback on the SEA Scoping Report to help determine the scope and level of detail to be included in the Environmental Report.
- Public Consultation 2 – an eight-week consultation seeking feedback on the draft GWS and the associated SEA Environmental Report and Natura Impact Statement (NIS).



Figure 3-1: Draft GWS Consultation Roadmap

Throughout the development of the draft GWS, UÉ has engaged with key stakeholders, including Local Planning Authorities, different government departments, the HSE, and the Environmental Protection Agency (EPA). Stakeholder insights are document in *Public Consultation 1 Responses* and have helped to shape the draft strategy. Regular engagement through meetings, technical workshops, and feedback sessions has allowed UÉ to incorporate stakeholder priorities into decision-making. As the strategy transitions into its implementation phase, sustained collaboration will be essential. UÉ will continue engaging stakeholders through advisory groups, technical working groups, and public consultation updates, ensuring that stakeholder feedback remains at the core of decision-making. By maintaining an open dialogue and incorporating insights from a diverse range of stakeholders, UÉ aims to deliver a wastewater strategy that supports Galway’s long-term growth and enhances environmental protection and public health.

This approach ensures that UÉ will be engaging with stakeholders throughout the process and allows stakeholders and members of the public to have an opportunity to contribute to, and influence, the draft GWS. There will be continuous communication and engagement with environmental authorities, interested parties and the public as the plan progresses.

Table 3-1: Work phases and consultations during the development of the draft GWS

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

3.2 Consultation on Scoping Report

Public Consultation 1 commenced on Thursday 26 September 2024 and ran for eight weeks, concluding on Wednesday 20 November 2024. Throughout this period, members of the public, interested parties, and statutory environmental authorities were invited to contribute to the development of the draft GWS. As part of this consultation, the SEA Scoping Report, Issues Paper and AA Screening Report were made available to facilitate and support early engagement and to inform the preparation of the draft GWS and its associated environmental assessments. This first stage of formal consultation was designed to inform the development of the SEA Environmental Report and the Natura Impact Statement (NIS). The purpose of this initial consultation was to:

- Enable key internal and external stakeholders to provide feedback on the development of draft GWS
- Initiate structured connection and engagement with key, regulatory and statutory stakeholders
- Identify potential issues or concerns that need to be addressed in the draft GWS and associated environmental reports

The [SEA Scoping Report](#) set out the proposed framework of Strategic Environmental Objectives (SEOs) to guide the next stage of the assessment process, outlined the key external influences relevant to the draft GWS, described the draft SEA assessment approach, and identified interrelationships between environmental topics and other plans, policies, and projects. Published as part of Public Consultation 1, the Scoping Report presented the proposed scope, baseline, environmental issues and general SEA methodology for review. Stakeholders were invited to comment on all aspects of its content to ensure that the scope and direction of the SEA were appropriate, comprehensive and informed by expert and local knowledge. To support meaningful engagement, UÉ prepared a series of consultation questions to guide stakeholders in making submissions on the Scoping Report and to gather feedback for consideration in the further development of the draft GWS.

In accordance with the SEA Directive, UÉ formally consulted the statutory environmental authorities on the proposed scope and level of detail for the Environmental Report. The authorities consulted included:

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

3.3 Scoping consultation feedback

During the eight-week consultation period on the SEA Scoping Report, a total of 14 submissions were received from a range of stakeholders, including government departments, state agencies, local authorities, community groups, business representatives, non-governmental organisations, and individual members of the public. Submissions were received from the Department of Agriculture, Food and the Marine; the Department of Housing, Local Government and Heritage; the Department of the Environment, Climate and Communications (DECC); the Environmental Protection Agency (EPA); Transport Infrastructure Ireland (TII); Galway City Council; Galway County Council; Inland Fisheries Ireland; An Taisce; Galway Chamber; Save Our Shoreline Bearna; Pobal Bhearna; Cuan Beo; and three individual members of the public.

Feedback received during Public Consultation 1 related to the Issues Paper, the SEA Scoping Report and the AA Screening Report. The submissions raised a broad range of issues, which have been grouped into key themes to support analysis and to inform the development of the draft

GWS and its associated environmental assessments. Submissions have been broadly summarised into 11 main themes:

- Legislative Compliance and Interactions with Plans, Programmes and Policies
- Study Area Boundary
- Planning for Future Development and Growth
- Status of Existing UÉ Infrastructure
- Timeline, Resources, and Development
- Mutton Island WwTP
- The Quality and Protection of Surface and Groundwaters
- Archaeological and Cultural Heritage
- Monitoring and Reporting
- Data Sources and Knowledge Gaps
- Consultation and Communication

Overall, the submissions highlighted the need for the draft GWS to demonstrate strong alignment with relevant EU Directives and national, regional and local policy frameworks, and emphasised the importance of fully integrating the SEA and AA processes into strategy development, including clear mitigation, monitoring and review mechanisms. Stakeholders also expressed concerns regarding the adequacy of the Study Area boundary, with some recommending that additional towns with functional links to Galway be considered. Concerns about future growth and capacity were raised frequently, with calls for proactive and timely wastewater infrastructure planning that supports compact development and aligns with statutory planning strategies.

Many respondents noted that existing network and treatment capacity constraints are already placing the system under pressure and could lead to overburdening if not addressed. Some stakeholders felt that the Strategy places too much emphasis on medium- and long-term measures while overlooking urgent short-term needs. They cautioned that unresolved issues could undermine future projects and called for interim solutions to prevent existing infrastructure from becoming further strained. Concerns were also raised regarding resource allocation, with some perceiving that Galway has been disadvantaged in comparison with other regions.

These capacity and infrastructure issues particularly related to storm water overflows (SWOs), structural vulnerabilities in key assets, tidal and climate-related risks, and the significant pressure on Mutton Island WwTP. Some stakeholders questioned whether Mutton Island WwTP could accommodate projected growth within its catchment, while others highlighted that the plant is already operating beyond its original capacity. Another concern with Mutton Island WwTP was in relation to how increased sea levels and rainwater caused by climate change will impact its operational and biological treatment capacity. Delays in addressing these challenges were seen as potentially undermining the plant's ability to support a growing population.

Submissions also referenced wider environmental considerations, including the need to prevent pollution to surface and groundwaters, safeguard water quality in line with the Water Framework Directive, improve climate resilience, and mitigate risks to sensitive coastal and freshwater environments. Several stakeholders emphasised the importance of a robust monitoring framework and identified data gaps—particularly relating to population projections, archaeology, and environmental datasets—recommending that additional sources of information be

incorporated. Finally, respondents stressed the importance of ongoing engagement and collaboration with regulatory authorities, local authorities, community groups and other stakeholders throughout the development and implementation of the Strategy.

3.4 Consultation on the Draft GWS, SEA Environmental Report and NIS

All feedback received during the Public Consultation 1 process on the draft GWS Issues Paper, SEA Scoping, and AA Screening reports was reviewed by the draft GWS team and relevant observations have been incorporated into the preparation of the draft GWS. The draft GWS will be published in 2026 and will be subject to a further eight-week statutory public consultation before the Strategy is reviewed and finalised.

The second stage of consultation (Public Consultation 2) invites feedback from members of the public, interested parties, and environmental authorities on the draft GWS, this SEA Environmental Report, and the accompanying NIS.

As per the 2025 SEA Regulations (S.I. 456 of 2025)⁴, the following SEA statutory environmental authorities were notified and invited to make a submission on any aspect of the draft GWS and associated environmental assessments:

- Environmental Protection Agency
- Minister for Housing, Local Government and Heritage
- Minister for Climate, Energy and the Environment
- Minister for Agriculture, Food, & the Marine

In order to assist stakeholders in making a submission as part of this consultation, Uisce Éireann has invited feedback on the following questions, but feedback is not limited to them:

1. Strategic Approach and Recommended Options

The draft Galway Wastewater Strategy identifies the development of a new Regional Galway East Wastewater Treatment Plant (WWTP), with two associated discharge outfall options, as the recommended strategic approach.

Do you have any comments on this recommended approach or on the assessment process used to identify these options?

2. Methodology and Option Assessment

Sections 5 and 10 of the draft Galway Wastewater Strategy set out the methodology used to assess current wastewater infrastructure, identify future needs, and develop and evaluate strategic wastewater options for the study area.

Do you have any comments on this methodology?

3. Additional Information or Considerations

⁴ EPA, 2026. SEA Contacts. Available at: [SEA contacts | Environmental Protection Agency](#). Accessed April 2026.

Are there any additional issues, information or local knowledge that you consider should be taken into account in the development of the Galway Wastewater Strategy?

4. Strategy Implementation

Section 12 of the draft Galway Wastewater Strategy outlines the proposed approach to implementing the Strategy.

Do you have any comments on the proposed implementation and delivery of the Strategy?

5. Environmental Assessment

Do you have any comments on the Strategic Environmental Assessment (SEA) Environmental Report and the Natura Impact Statement (NIS) that accompany the draft Galway Wastewater Strategy?

6. Additional Comments

Do you have any further comments on the draft Galway Wastewater Strategy?

All stakeholder feedback will be reviewed and considered as we finalise the Galway Wastewater Strategy. Each submission will be acknowledged, collated into a consultation 2 report, and responded to in the final Galway Wastewater Strategy. Submissions from individuals will be reported anonymously and feedback from organisations will be attributed to them.

4. Review of Policies, Plans and Programmes

Under the SEA Directive, environmental assessments must identify the key environmental protection objectives that apply to a plan or programme and show how these have been considered during its preparation. To meet this requirement, a review was carried out of relevant international, national, regional, and local plans, policies, and legislation. This sets the context for the SEA and the draft GWS, identifying wider environmental protection objectives, and examines how the draft GWS may be influenced by or contribute to the aims, objectives, and targets of these documents. This review was completed in two stages:

- A comprehensive overview of all relevant legislation and plans
- A focused review identifying how these documents shape the scope of the SEA, including baseline topics and Strategic Environmental Objectives

The following plans and legislation informed the draft GWS, and will be discussed further in **Section 5** of this report:

Plans

- Project Ireland 2040 - National Planning Framework
- Regional Spatial and Economic Strategy (RSES) 2020-2032
- Ireland's Climate Action Plan
- Galway City Development Plan
- Galway Metropolitan Area Strategic Plan (MASP)
- Galway County Development Plan
- Galway Docks Expansion Project
- The South Park & Public Realm Project

Legislation

- recast Urban Wastewater Treatment Directive (rUWWTD) (EU) 2024/3019
- Urban Waste Water Treatment Directive (UWWTD) (91/271/EEC)
- Water Services Act 2013, No. 30 of 2013 (as amended)
- Water Framework Directive (WFD) (2000/60/EC)
- Bathing Water Directive (2006/7/EC)
- Wastewater Discharge (Authorisation) Regulations 2007 (S.I. No. 684/2007) (as amended)
- Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021))

5. Environmental Baseline Review

5.1 Introduction

Article 5 of the SEA Directive requires the preparation of an Environmental Report that identifies, describes, and evaluates the likely significant environmental effects of implementing a plan or programme. Annex I of the Directive specifies the information to be included in the report and identifies the environmental factors to be considered, including biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape, and the interrelationship between these factors.

This section of the SEA Environmental Report describes preliminary information on the existing baseline environment in the draft GWS Study Area. The baseline environment is an outline of the current situation or condition drawn from available information, which provides a benchmark against which environmental effects of proposals can be assessed. Information in this section includes:

- Description of the existing baseline environment
- Future trends – the likely future trends and the basis for the potential evolution of the existing baseline environment in the absence of the GWS is set out.
- Key considerations for the development of the draft GWS and undertaking SEA – this summarises the key points to be considered from the review of the existing baseline environment most relevant to the development of draft GWS, including challenges and opportunities, to help focus the environmental assessment and inform the Strategic Environmental Objectives.

5.2 Types of Actions and Activities influenced by the Draft GWS

As background for the assessment, the broad types of activities that UÉ will be responsible for during the implementation of the draft GWS are considered to identify the types of impacts that could give rise to significant effects on the environment. These are summarised in **Table 5-1** below:

Table 5-1: Types of GWS related activities and potential environmental impacts

GWS related activity	Potential types of environmental Impacts
Development of new wastewater services infrastructure including pipelines and wastewater treatment plants – construction,	<ul style="list-style-type: none"> • Land use change/loss - temporary and permanent. • Loss/change in habitat area. • Disturbance (short-term or long-term) to species. • Habitat fragmentation including barrier effects to species movement. • Species mortality (including prey species). • Hydrological changes to aquatic environments.

GWS related activity	Potential types of environmental Impacts
operation and decommissioning	<ul style="list-style-type: none"> • Transfer of invasive alien species through construction and operational activities. • Construction disturbance effects from noise, air pollution, water pollution, visual amenity on nearby receptors and traffic disruption impacts. • Cultural heritage impacts on sites and risk to buried archaeological interest. • Landscape/ townscape and seascape impacts depending on structure and location. • Geological sites and soils loss or damage. • Source of carbon emissions, energy and material resource use for construction and waste generation. • Benefits from improved access to wastewater collection. • Improved operational energy efficiency and carbon emissions from rationalisation. • Odour issues from wastewater treatment but also potential for improvement with operational practices and upgraded treatment. • Potential vulnerability to effects of climate change on structures and operations – e.g. from increase in extreme events such as storms, floods, droughts and freeze/thaw events. • Supporting wastewater service demand and improving reliability and flexibility in the network.
Discharge of treated wastewater and stormwater and untreated discharges	<ul style="list-style-type: none"> • Surface and groundwater pollution from discharge of wastewaters from sewage treatment plants, and stormwater and raw sewage discharges affecting WFD water quality objectives for freshwater, estuarine and coastal waters. • Impacts on the aquatic ecology of freshwater, estuarine and coastal waters with associated effects on ecosystem services such as through reduced biodiversity, recreation impacts (for example on designated Bathing Waters and angling), and fisheries impacts including on Shellfish Waters Protected Areas and associated users and livelihoods. • Landscape and visual amenity impacts related to effects of pollution such as algal blooms and untreated sewage. • Reduced resilience to climate change and other pollutant pressures.

GWS related activity	Potential types of environmental Impacts
Wastewater sludge disposal	<ul style="list-style-type: none"> • Wastewater treatment processes can influence the potential for disposal, recycling or resource recovery from sludges. • Potential for pollution from wastewater treatment sludge disposal
Other types of activity	<ul style="list-style-type: none"> • These can include a range of supporting actions, many of which can provide beneficial impacts, for example: <ul style="list-style-type: none"> ○ Catchment management initiatives and Nature-Based Solutions (NBS) typically requiring collaboration with other stakeholders for delivery but also potentially providing wider environmental benefits supporting the receiving environment. ○ Awareness raising/behaviour and upstream business/manufacturing changes to reduce pollutants entering system and environment. ○ Innovation in treatment technology to address emerging issues. ○ Property and operations management, investigations, monitoring, studies, and mitigation measures related to delivery and improving services and reducing impacts or uncertainty of outcomes.

5.3 SEA Topics

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

- Water Environment (W1)
- Population, Economy, Tourism and Recreation, and Human Health (P1)
- Climate Change (C1)
- Biodiversity (B1)
- Material Assets (M1)
- Landscape, Townscape and Seascape (L1)
- Cultural Heritage – Archaeological and Architectural (H1)
- Geology and Soils (G1)
- Air Quality (A1)
- Noise and Vibration (N1)

5.4 Draft GWS SEA Study Area

The spatial areas for the draft GWS SEA are as follows:

- The GWS Study Area comprises the Galway Metropolitan Area, Athenry and Moycullen, as per **Figure 1-1**.
- Zone of influence for designated sites and waterbodies, including those located partially or fully outside of the draft GWS study area which, by applying the “source-pathway-receptor” model, have been determined to have potential impact pathways connecting elements of the draft GWS to the designated sites and waterbodies.

5.4.1. Transboundary provisions

In accordance with Article 7 of the SEA Directive, transboundary consultation is required where the implementation of a plan or programme is likely to have significant environmental effects in another Member State. In this instance, the strategy relates to a defined geographic area within Galway Metropolitan Area (GMA) in County Galway. The area is located a considerable distance from the land border with Northern Ireland and does not involve activities that would extend beyond the jurisdiction of the State or interact with cross-border environmental receptors such as shared river basins, coastal waters, or infrastructure networks. On this basis, it is not considered likely that the implementation of the GWS would result in significant environmental effects in another Member State. Accordingly, the transboundary provisions of the SEA Directive will not be considered further.

5.5 SEA Time Frame

The temporal scope for the SEA is the period between 2026 and 2080. Options proposed in this iteration of the draft GWS will support the delivery of longer-term solutions. The long-term horizon creates a challenge in establishing a robust environmental baseline this far into the future, however, the GWS will be revised and updated on a regular basis and the SEA assessment will be revised and updated alongside the future iterations of the GWS.

5.6 High Level Environmental Trends Across Ireland

The EPA’s State of the Environment Report 2024⁵ provides:

- An assessment of the overall quality of Ireland’s environment
- An outline of the pressures being placed on this environment
- The key actions that can address these pressures

The EPA’s State of the Environment Report 2024 identifies several national environmental challenges. The following issues are particularly relevant to the development of the draft GWS:

- **Water:** Urban wastewater discharges are affecting 197 water bodies throughout Ireland, primarily through excess nitrogen and phosphorus, organic pollution, and pathogens from

⁵ Environmental Protection Agency (EPA). 2024. Ireland's State of the Environment Report 2024. Available at: [Ireland's State of the Environment Report 2024](#). Accessed: January 2026.

inadequately treated sewage, posing risks to public health and ecosystems. Targeted phosphate control can significantly improve rivers and lakes while delivering climate and biodiversity co-benefits. Achieving water quality objectives requires strict compliance with environmental legislation, stronger governance, and clear accountability. Climate change will put further pressure on water services and water quality, making resilient infrastructure investment and adaptive management essential for long-term urban sustainability. Plans such as the Water Action Plan and Uisce Éireann's National Water Resources Plan are key to identifying risks and adaptation measures⁶.

- **Climate:** Climate change is already having an impact on people, animals and plants in Ireland, and Ireland needs to be resilient to ongoing and future climate change impacts. The implementation of climate adaptation measures is currently too slow and fragmented. More cross-sectoral and integrated adaptation actions can deliver multiple benefits⁷.
- **Nature and Biodiversity:** Ireland's natural and semi-natural habitats are largely degraded due to agricultural intensification, pollution, invasive species, and climate change. Biodiversity has been pushed to the margins, requiring coordinated, evidence-based action for protection and restoration. Effective nature management must be mainstreamed across government, social, and economic sectors, ensuring enforcement, restoration, and conservation are integrated into national, regional, and local decision-making. Urgent, practical, and impactful measures are needed to reverse habitat decline and safeguard ecosystems, making nature protection a core part of planning, policy, and sustainable development⁸.
- Other environmental challenges for Ireland include waste management, soil health, and transitioning to a circular economy. Circular economy principles aim to reduce waste and keep resources in use, yet Ireland's material circularity rate was only 2% in 2020, highlighting significant potential for improvement. Achieving this transition requires collaboration across all sectors, including in wastewater treatment, where focus on resource recovery, efficiency, and sustainability will be critical. Soil health is increasingly important, supported by the EU Soil Strategy 2030 and Directive (EU) 2025/2360, which provide a legal framework to restore degraded soils and achieve long-term soil sustainability.

These environmental challenges relevant to the draft GWS align closely with four UN Sustainable Development Goals (SDGs). These are: SDG 6, ensuring sustainable water and sanitation management; SDG 13, promoting urgent climate action; SDG 14, supporting the conservation and sustainable use of oceans and marine resources; and SDG 15, focusing on the protection and sustainable management of terrestrial ecosystems, forests, soils, and biodiversity. Integrating these SDGs into the draft GWS ensures that water, land, and marine management efforts contribute to global sustainability targets while addressing local environmental and climate

⁶ Environmental Protection Agency (EPA). 2024. Ireland's State of the Environment Report 2024 – Water. Available at: [State of the Environment Report – Chapter 8: Water](#). Accessed: February 2026.

⁷ Environmental Protection Agency (EPA). 2024. Ireland's State of the Environment Report 2024 – Climate. Available at [Ireland's State of the Environment Report 2024 - Chapter 4 - Climate | Environmental Protection Agency](#). Accessed: March 2026.

⁸ Environmental Protection Agency (EPA). 2024. Ireland's State of the Environment Report 2024 – Nature. Available at [State of the Environment Report – Chapter 7: Nature](#). Accessed: March 2026.

challenges. Significant population increase is anticipated over the coming decades, which is an important consideration for wastewater treatment, and therefore relevant for the water environment including compliance with the Water Framework Directive and SDGs 6 and 14. Specific indicators for meeting the UN SDGs in Ireland are reported on Ireland's SDG data hub⁹, and include a Central Statistics Office Report on Indicators for Goal 6 Clean Water and Sanitation¹⁰.

5.7 Sources

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

- EPA Maps <https://gis.epa.ie/EPAMaps/>
- The Central Statistics Office (CSO) <https://www.cso.ie/en/index.html>
- The National Parks and Wildlife Service (NPWS) <https://www.npws.ie/>

5.8 Water Environment

5.8.1. Water Environment Baseline Conditions

The study area is covered by three catchments namely Galway Bay North (EPA code 31), Corrib (EPA code 30) and Galway Bay Southeast (EPA code 29), which are shown in **Figure 4-1**.

5.8.1.1. Water Quality

The EPA's latest water quality report¹¹ provides an assessment (using data collected between 2019 and 2024) of the condition of Ireland's waters (rivers, lakes, canals, groundwaters, transitional (estuaries) and coastal waters) against the objectives and standards set out in the EU Water Framework Directive 2000/60/EC (WFD) and Ireland's River Basin Management Plan (RBMP) for this current 3rd WFD Cycle (Water Action Plan 2024). This assessment shows that over half (52%) of our surface waters are in satisfactory ecological health being in either good or high ecological status. This means that 48% of the surface water bodies in Ireland are not as ecologically healthy or resilient as they should be. The number of water bodies in satisfactory condition (high or good status) across rivers, lakes, estuaries, and canals has declined since the last assessment which covered the period 2016-2021. In contrast, coastal waters and groundwaters improved slightly over the 2019-2024 assessment period. Overall, there has been a net decline in our water quality. The decline reported in this assessment reflects the ongoing pattern of continuing declines in

⁹ Tailte Éireann. 2026. Ireland's Sustainable Development Goals (SDG) Data Hub. Available at: [Irelands Hub for Sustainable Development Goals](https://irelands-hub-for-sustainable-development-goals.com/). Accessed: January 2026.

¹⁰ Central Statistics Office (CSO). 2021. Ireland's UN SDGs 2019 - Report on Indicators for Goal 6 Clean Water and Sanitation. Available at: [UN SDG's Goal 6 - Clean Water and Sanitation - CSO - Central Statistics Office](https://www.cso.ie/en/indicators/indicators-for-goal-6-clean-water-and-sanitation/). Accessed: March 2026.

¹¹ Environmental Protection Agency (EPA). 2025. Water Quality in Ireland 2019-2024. Available at: [Water Quality in Ireland 2019-2024 | Environmental Protection Agency](https://www.epa.ie/publications-and-reports/water-quality-in-ireland-2019-2024/). Accessed: December 2025

water quality seen since the first assessment of ecological status was undertaken in the period 2007-2009. The main causes of pollution into Ireland's water environment include run-off of nutrients, sediment, and pesticides from agriculture; discharges of poorly treated sewage from urban wastewater treatment plants, domestic treatment systems, and storm water overflows; run-off from hard surfaces in urban environments of sediment and contaminant loaded water; and run-off of nutrients and sediment from forestry operations¹². As one of the key causes of water pollution is from point sources including discharges from wastewater treatment plants, this is very relevant to the draft GWS. Planning of wastewater infrastructure for the draft GWS needs to be done within the constraints of the local receiving environment and in compliance with existing legislative requirements, including those under the WFD, to prevent deterioration of waterbody status.

River and lake surface water bodies within or adjacent to the study area and their water quality status and pressures are summarised in **Table 5-2** and illustrated in **Figure 5-2**. Of the pressures noted, urban wastewater is of relevance to the draft GWS.

¹² Environmental Protection Agency (EPA). 2025. Water Quality in Ireland 2019-2024. Available at: [Water Quality in Ireland 2019-2024 | Environmental Protection Agency](#). Accessed: December 2025.

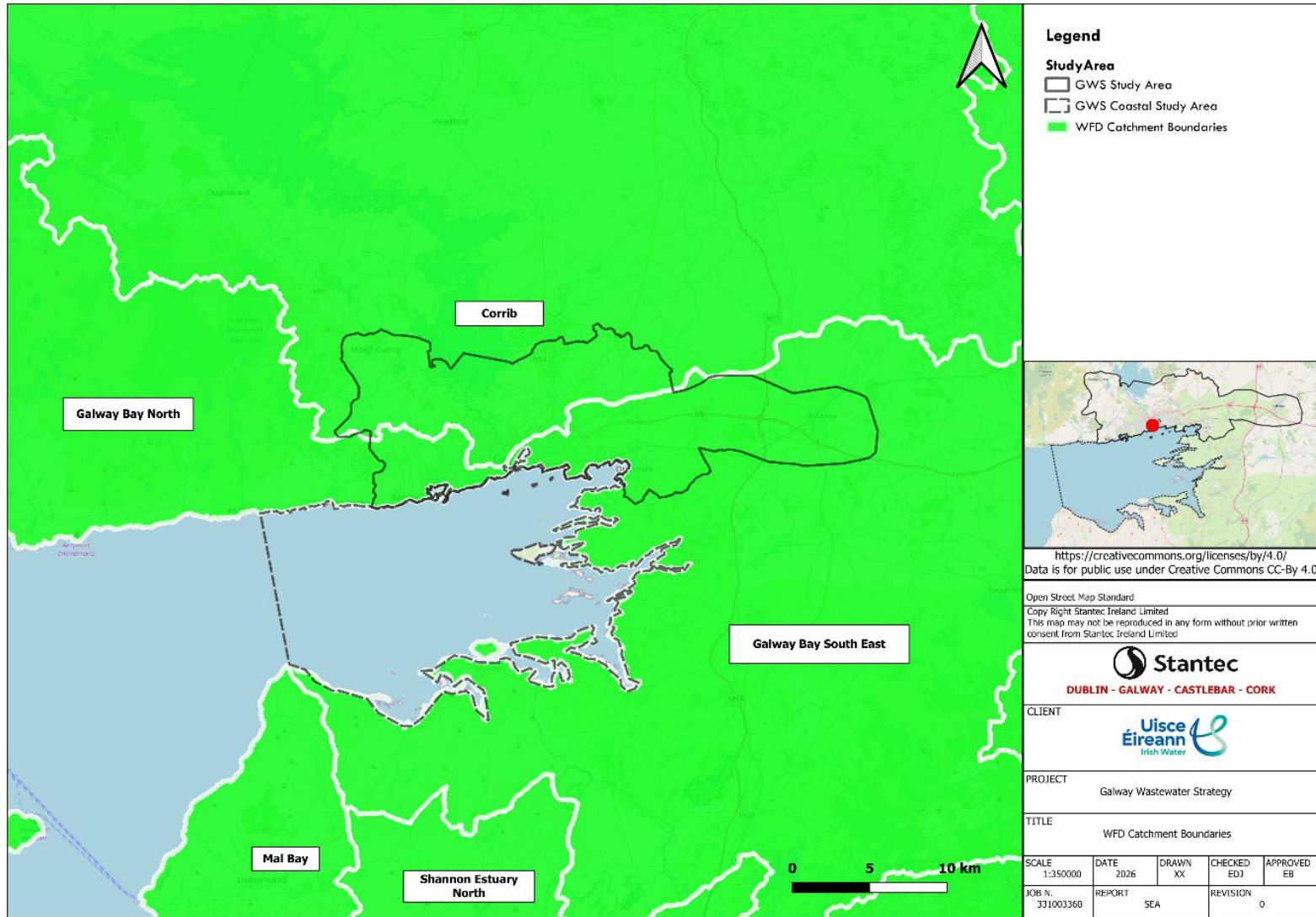


Figure 5-1: Water Framework Directive (WFD) Catchment Boundaries in the draft GWS Study Area

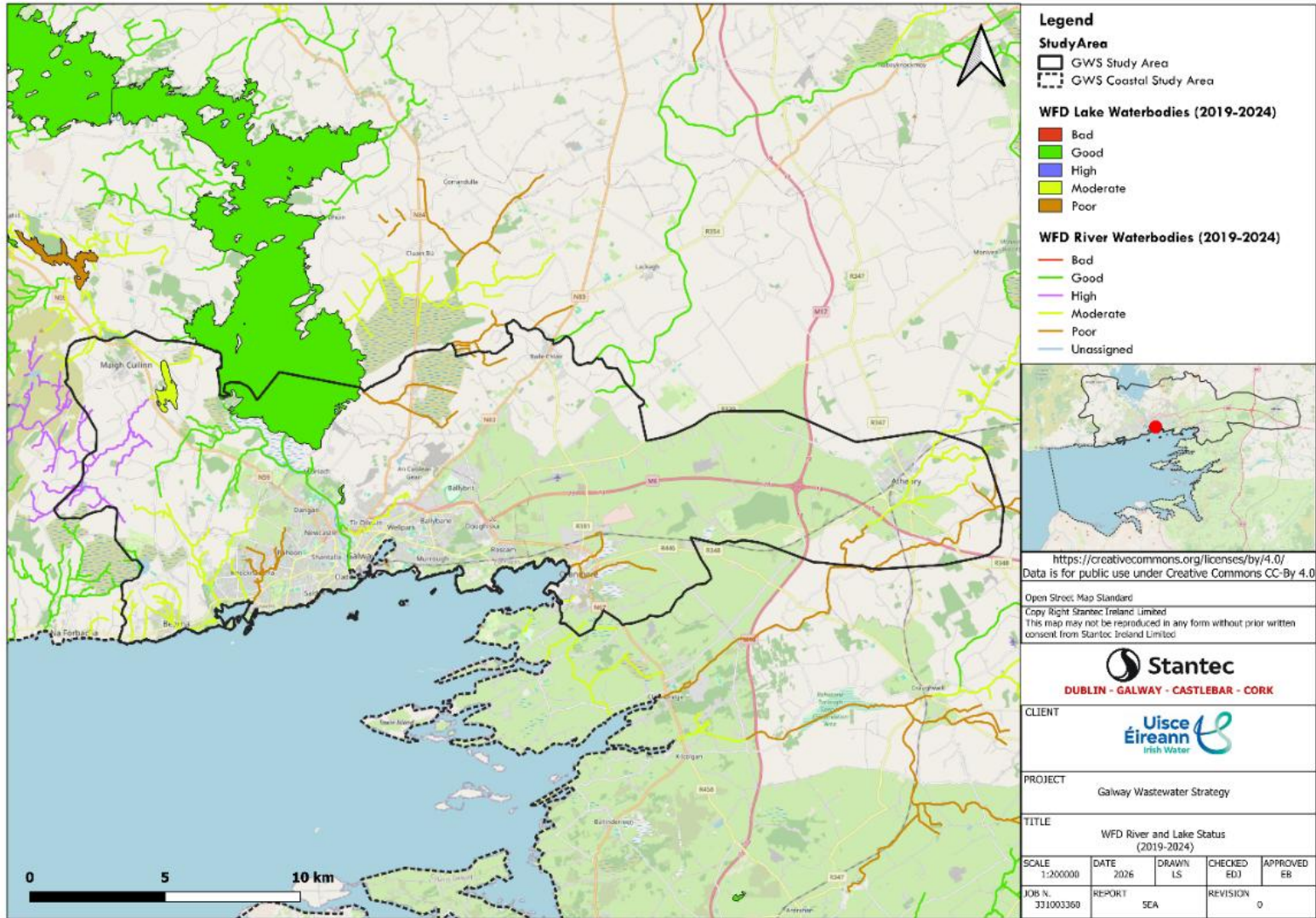


Figure 5-2: Water Framework Directive (WFD) Status (2019-2024) for River and Lake Waterbodies in the draft GWS Study Area

Table 5-2: WFD Water Quality of river and lake surface waterbodies within the study area¹³

River and Lake Water Bodies	Status (2019-2024)	3 rd WFD Cycle Risk	Significant Pressures
River Waterbodies			
Corrib_020	Good (monitoring)	Not at Risk	None
Corrib_010	Good (modelling)	Not at Risk	None
Knocknacarragh_010	Poor (modelling)	Review	None
Barna (Stream)_010	Moderate (modelling)	Review	None
Ballycuike_010	Moderate (monitoring)	At Risk	Urban run-off Hydromorphology
Trusky Stream_010	Moderate (modelling)	Review	Review
Loughkip_010	High (monitoring)	Not at Risk	None
Terryland_010	Moderate (monitoring)	At Risk	Urban run-off Hydromorphology
Carrowmoneash (Oranmore)_010	Poor (monitoring)	Review	Review
Clare (Galway)_100	Poor (monitoring)	Review	Review
Clare (Galway)_90	Good (monitoring)	At Risk	Hydromorphology
Clare (Galway)_80	Good (monitoring)	At Risk	Hydromorphology
Rockhill (Galway)_010	Moderate (modelling)	Review	Review

¹³ Environmental Protection Agency (EPA). EPA Maps. Available at: [EPA Maps](#). Accessed: January 2026.

River and Lake Water Bodies	Status (2019-2024)	3 rd WFD Cycle Risk	Significant Pressures
Clarinbridge_050	Poor (monitoring)	At Risk	Agriculture Domestic wastewater Urban run-off
Clarinbridge_040	Poor (monitoring)	At Risk	Urban wastewater
Clarinbridge_030	Moderate (monitoring)	At risk	Urban wastewater
Clarinbridge_020	Moderate (monitoring)	Review	Review
Lake Waterbodies			
Corrib Lower	Good (monitoring)	Not At Risk	None
Menlough	Good (monitoring)	Not At Risk	None
Ballyquirke	Poor (monitoring)	At Risk	Invasive species Urban Wastewater
Ross GY	Poor (monitoring)	At Risk	Invasive species

Coastal and Transitional Waterbodies

The coastal and transitional (estuaries and lagoons) waterbodies and their water quality status within the draft GWS study area are summarised in **Table 5-3** and illustrated in **Figure 5-3**. No significant pressures to these waterbodies have been identified. The Corrib Estuary transitional waterbody is currently under review for potential pressures placing it at risk of failing to achieve its WFD objectives.

Table 5-3: WFD Status and Risk of major coastal and transitional water bodies within the draft GWS study area¹⁴

Major Coastal (CWB) and Transitional Bodies (TWB)	Status (2019-2024)	3 rd WFD Cycle Risk
Corrib Estuary (TWB)	Good (monitoring)	Review
Oranmore Bay (TWB)	Moderate (grouping)	Not At Risk
Inner Galway Bay North (CWB)	Good (monitoring)	Not At Risk
Outer Galway Bay (CWB)	High (monitoring)	Not At Risk
Inner Galway Bay South (CWB)	High (grouping)	Not At Risk
Dunbulcaun Bay (TWB)	High (grouping)	Not At Risk

¹⁴ Environmental Protection Agency (EPA). EPA Maps. Available at: [EPA Maps](#). Accessed: January 2026.

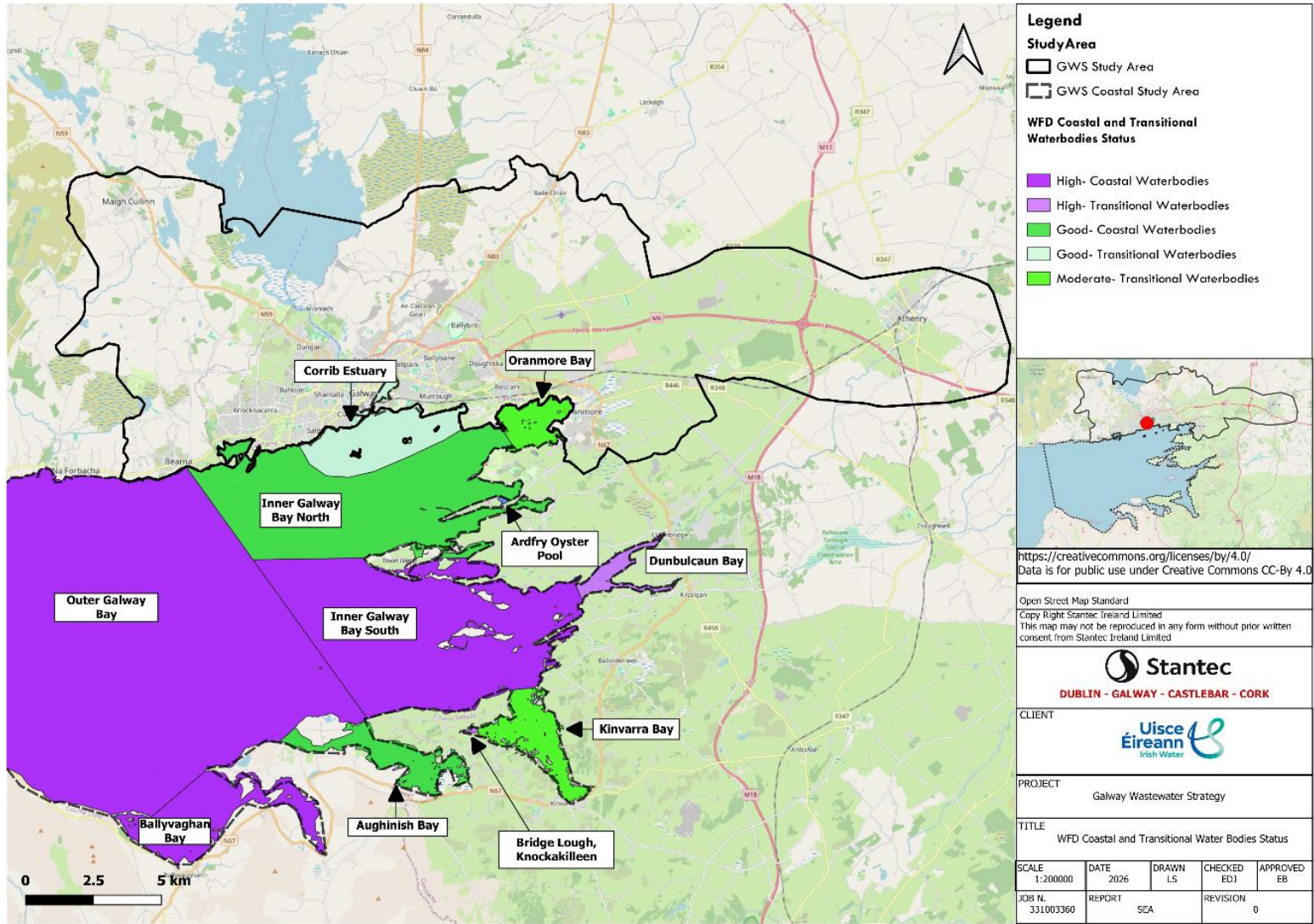


Figure 5-3: WFD Status (2019-2024) of Transitional and Coastal Waterbodies in the draft GWS Study Area

Groundwater bodies

Groundwater is the water stored in geological strata - such as rocks, gravel and sand - in the saturated zone, which is located below the water table. These water-bearing geological layers are known as aquifers. These aquifers are permeable, allowing both the infiltration of water from the soils above them and the yielding of water to surface waters. Groundwater can naturally flow into rivers (called base flow) and support wetlands, forming an integral part of ecosystems¹⁵.

A 'groundwater body' is the management unit under the WFD that is necessary for the subdivision of large geographical areas of aquifer for them to be effectively managed. The Geological Survey Ireland (GSI) delineated GWBs so that they can be effectively managed to protect the groundwater and linked surface waters. Because boundaries between groundwater bodies are conceptual and management-based, they often have natural fluvial and groundwater connections. Groundwater bodies are often interconnected through groundwater because they are management units of a larger aquifer, and the groundwater flows between them are based on hydrogeological principles.

A few metres downstream of Athenry WwTP, the Clarinbridge River (Clarinbridge_030) runs straight into a large swallow hole, described as a 'Major sink'¹⁶. In extended dry periods, all the flow in the river can sink at this point. There are several other large swallow holes located further downstream in the Clarinbridge River, including Polnacirca, the now drained Polnacirca turlough, and Willmount Turlough. Water that sinks at these swallow holes, including the large one beside Athenry WwTP, resurges again at major springs. These springs include Clarinbridge, Kilcornan, and Kilcolgan West and East, which flow out into Dunbulcaun Bay transitional waterbody, part of Galway Bay Complex SAC. Due to the karstic nature of the bedrock (swallow holes) and fast groundwater velocities in the area, there is no attenuation of potential pollutants in the aquifer, and most groundwater is high or extremely vulnerable to contamination by human activities. Downstream Drinking Source Protection Areas and Galway Bay Complex SAC are sensitive receptors to potential contamination.

Although no mapped swallow holes are in the River Clare downstream of the Claregalway WwTP (Clare (Galway)_100 river waterbody), the drainage network here is wholly artificial and is essentially a canal connected to a series of pre-existing lakes, turloughs and springs. Strip groundwater recharge is very prevalent in the Clare River with many stretches losing water to the underlying aquifer with up to 30% losses in summer flow¹⁷. There are also many sinking streams upgradient (~600 m) of the Moycullen WwTP.

The Terryland River (Terryland_010) is unusual in that its flow is diurnal reverse flow, draining either from two estavelles to the River Corrib when they act as springs, or from the River Corrib to the estavelles when they act as sink. The estavelles are in a karst depression. It is understood that

¹⁵ Working Group on Groundwater. 2003. Approach to Delineation of Groundwater Bodies. Available at: [Approach to Delineation of Groundwater Bodies](#). Accessed: October 2025.

¹⁶ Drew and Daly 1993, Groundwater and Karstification in Mid-Galway, South Mayo and North Clare, Geological Survey of Ireland Report Series 93/3.

¹⁷ Drew and Daly 1993, Groundwater and Karstification in Mid-Galway, South Mayo and North Clare, Geological Survey of Ireland Report Series 93/3.

the estavelles are connected to Galway Bay or Lough Atalia via an underground conduit system, although the precise discharge locations remain unidentified¹⁸.

The groundwater bodies and their water quality status within the study area are summarised in **Table 5-4** and illustrated in **Figure 5-4**.

Table 5-4: Draft GWS Study Area Groundwater Status, Risk and Pressures¹⁹

Major Groundwater Bodies	Status (2019-2024)	Risk	Pressure Category
Maam-Clonbur	Good	Not at Risk	None
Ross Lake	Good	Not at Risk	None
GWDTE-Lough Corrib Fens 3&4 (SAC000297)	Good	Not at Risk	None
GWDTE-Lough Corrib Fen 1 (Menlough) (SAC000297)	Good	Not at Risk	None
GWDTE-Lough Corrib Fen 2 (SAC000297)	Good	Not at Risk	None
Spiddal	Good	Not at Risk	None
Clare-Corrib	Good	Not at Risk	None
Clarinbridge	Good	Not at Risk	None
Maam Clonbur	Good	Not at Risk	None
Waste Facility (W0013-01)	Poor	At Risk	Waste
Industrial Facility (P0056-01)	Poor	At Risk	Industry
GWDTE-Galway Bay Complex Fens (SAC000268)	Good	Not at Risk	None
Loughrea	Good	Not at Risk	None

¹⁸ Hennessy, R., Meehan, R., Gallagher, V., Parkes, M. & Glanville, C. 2020. The Geological Heritage of Galway City (County Geological Site Report – Terryland River (Sink/ Rising)). Geological Survey Ireland. Available at: [Galway City – County Geological Site Report](#). Accessed: March 2026.

¹⁹ Environmental Protection Agency (EPA). EPA Maps. Available at: [EPA Maps](#). Accessed: January 2026.

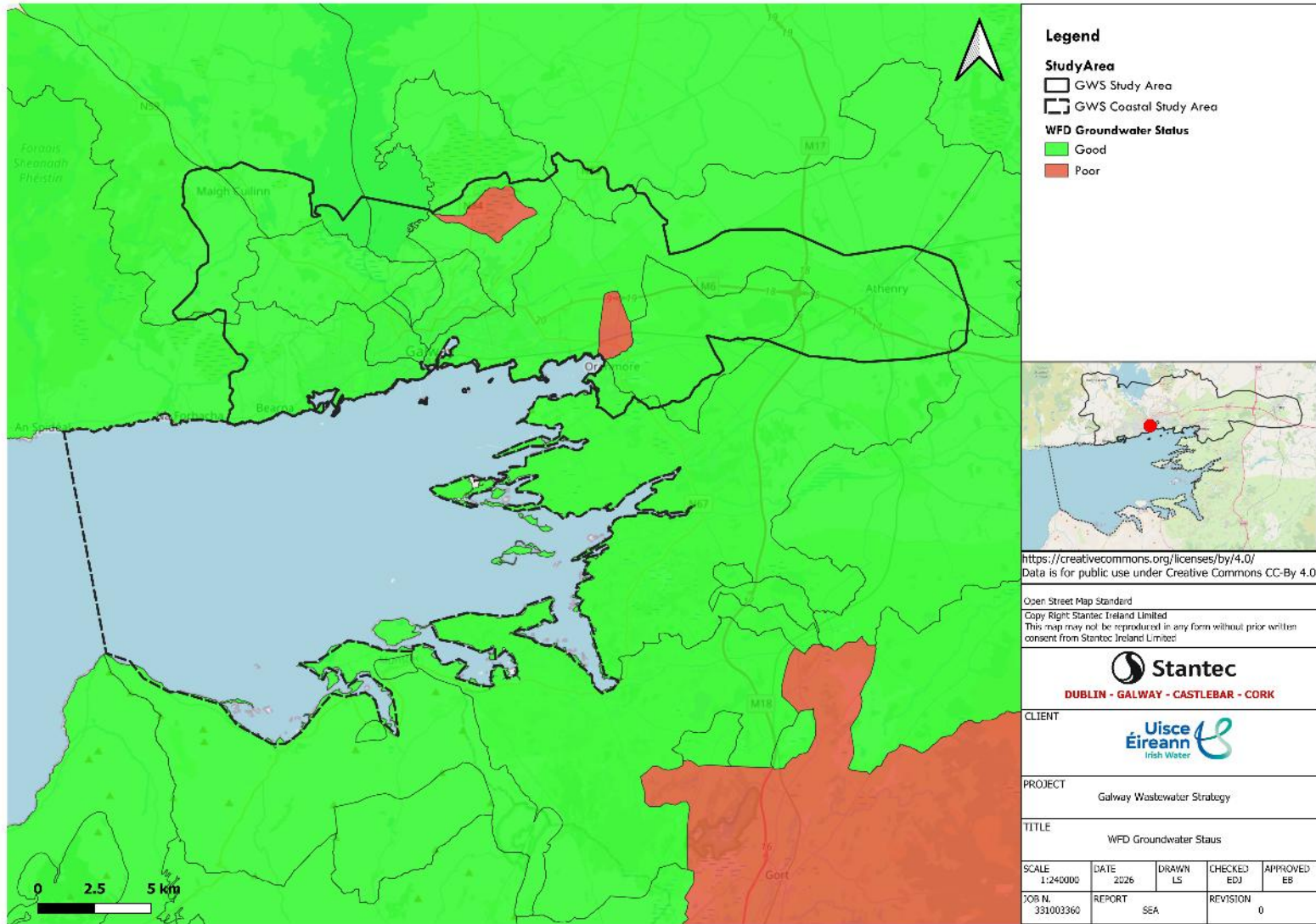


Figure 5-4: Status (2019-2024) of groundwater bodies within the draft GWS Study Area

Drinking Water Protected Areas

Drinking Water Protected Areas are areas designated for the abstraction of water intended for human consumption and are shown in **Figure 5-5**. Article 7 of the Water Framework Directive mandates that EU member states identify, protect, and monitor all waterbodies used for human consumption. Drinking water areas in Ireland are protected under The European Communities (Drinking Water) Regulations 2014 (SI No. 122 of 2014). All groundwater bodies within the draft GWS Study Area, Corrib_020 river waterbody, and Corrib Lower Lake waterbody are Drinking Water Protected Areas designated under Article 7 of the WFD.

Public Supply Source Drinking Water in Ireland is managed by Uisce Éireann. Public Supply Source Protection Areas are designated zones around groundwater sources (boreholes, springs) in Ireland, managed to prevent pollution and ensure safe drinking water, covering over 70% of public supplies.

Group water schemes are community-run organisations which provide potable drinking water to their local members. Areas surrounding individual groundwater Group Water Schemes sources are termed source protection areas. The National Federation of Group Water Schemes (NFGWS) promotes source protection through the delineation of Zones of Contribution to identify and protect raw water sources for group water schemes.

Figure 5-5 and **Figure 5-6** illustrate the Drinking Water Protection Areas, Group Water Schemes, and Public Supply Protection Area in the vicinity of the draft GWS study area.

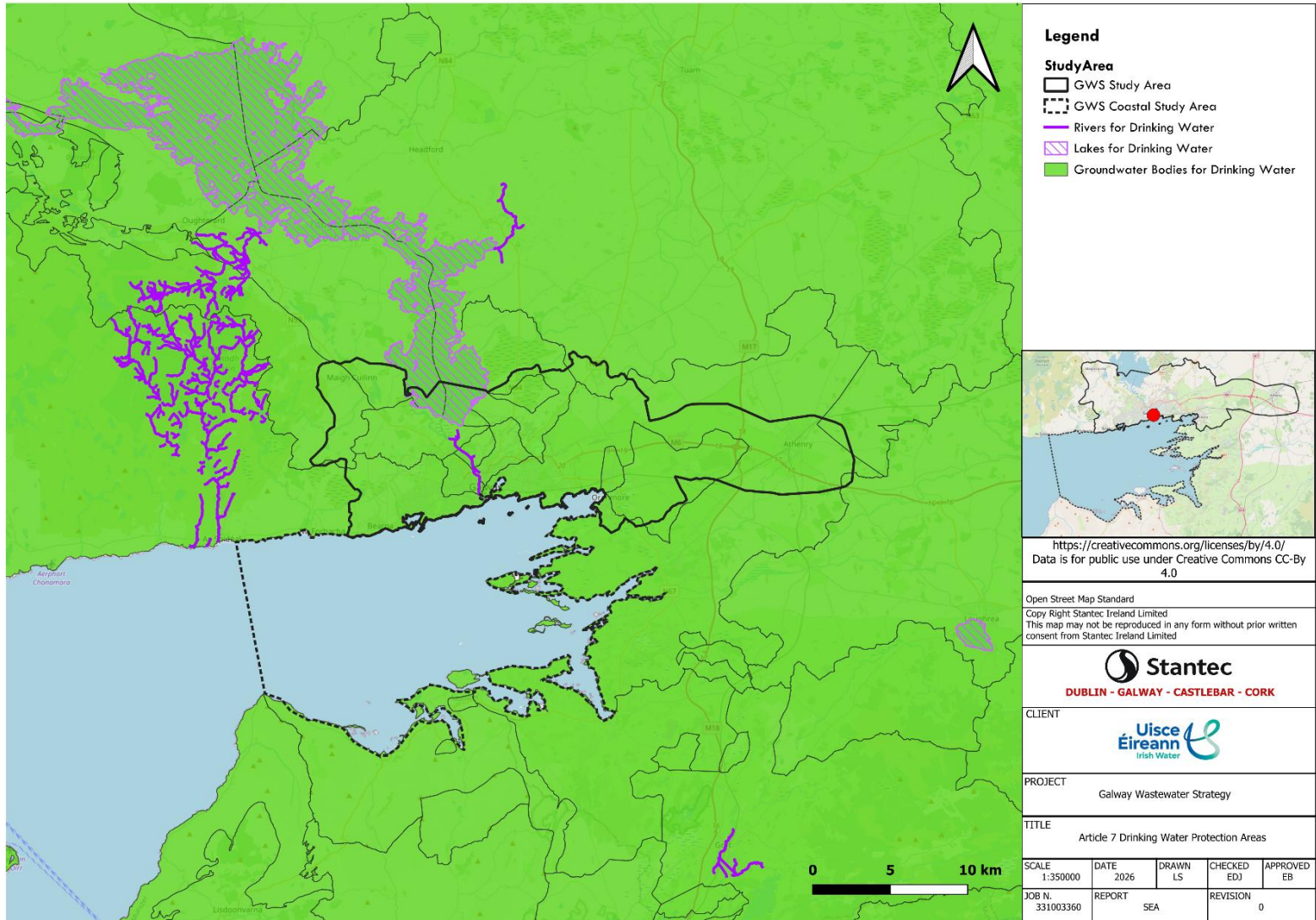


Figure 5-5: Drinking Water Protection Areas in the draft GWS Study Area

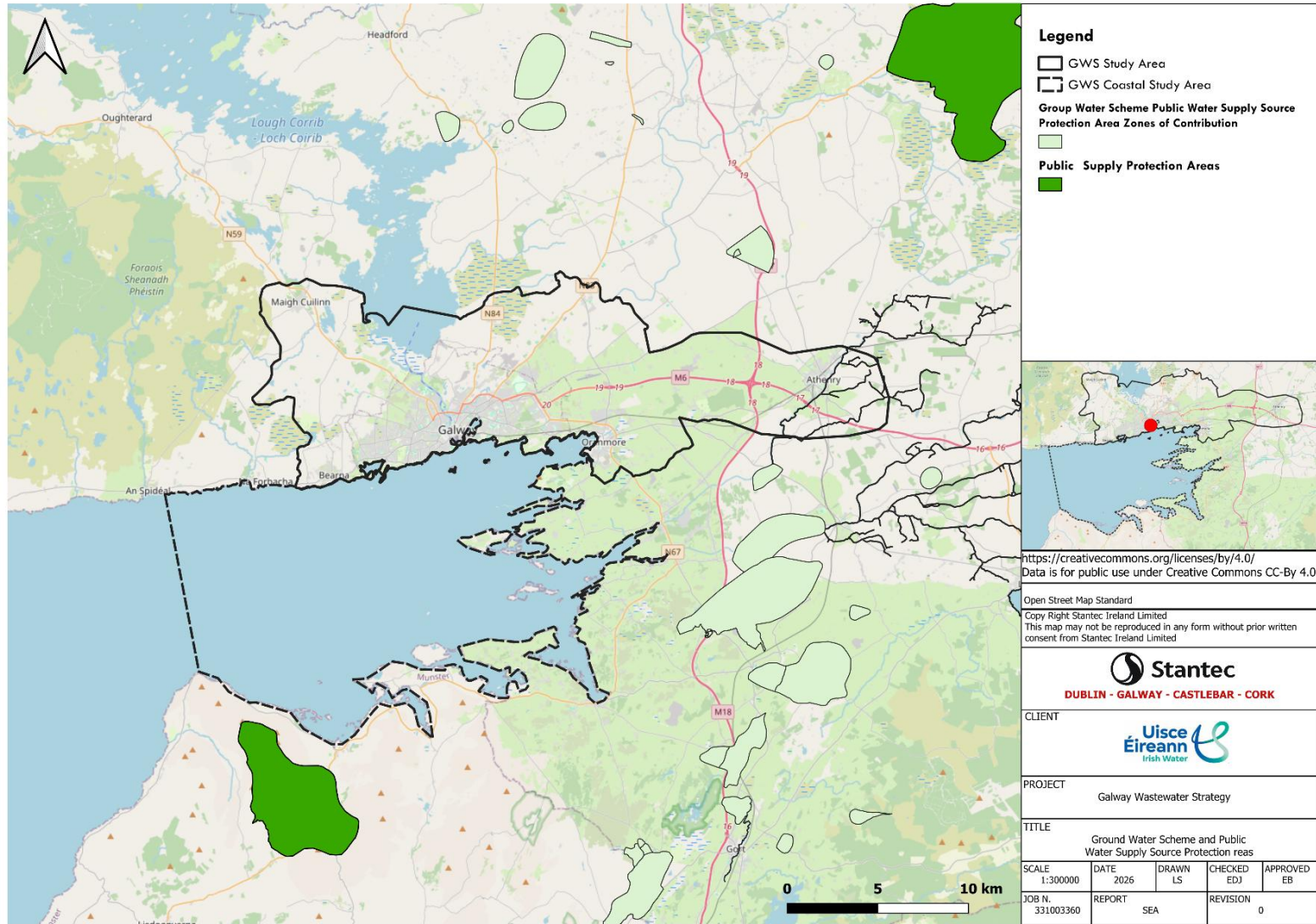


Figure 5-6: Group Water Schemes and Public Water Supply Source Protection Areas

Marine Environment

Ireland's location in the Atlantic Ocean on the edge of the European continent means that its marine environment has remained relatively unpolluted. In recent years however, the level of environmental stress, from both internal and external sources, has increased. The EU's primary tool for protecting and conserving the health of our coasts, seas and oceans is the EU Marine Strategy Framework Directive (MSFD) (Directive 2008/56/EC). This Directive aims to achieve a good environmental status for the EU's marine waters and to sustainably protect the resource base on which marine-related economic and social activities depend.

Nutrient Sensitive Areas

Nutrient sensitive areas are designated under the Urban Wastewater Treatment Directive (Directive 91/271/EEC), its recast Directive - the recast Urban Wastewater Treatment Directive (EU Directive 2024/3019) (rUWWTD), and the Nitrates Directive 91/676/EEC. The Nitrates Directive 91/676/EEC is transposed by S.I. No. 113 of 2022 The European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 (as amended). The recast Urban Wastewater Treatment Directive (EU) 2024/3019 has not yet been transposed into Irish law, as it was only recently finalised at the EU level. The Department of Housing, Local Government and Heritage is currently working on the transposition, with a deadline set for 31 July 2027. An EU Member State is bound by an EU Directive even if it hasn't transposed it, but the effects are limited until transposition happens. Nutrient Sensitive Area Waters may be identified as 'Sensitive (Eutrophic)' if found to contain excessive levels of nutrient waste as outlined by both the rUWWTD or Nitrates Directives, or likely to become eutrophic if preventative action is not taken. There are no WFD Nutrient Sensitive Waterbodies in the draft GWS Study Area.

Recreational Waters

Designated recreational waters include areas designated as bathing waters under the Bathing Waters Directive 2006/7/EC. Directive 2006/7/EC is transposed in Ireland by the Bathing Water Quality Regulations 2008 (S.I. No. 79 of 2008) (as amended).

There are several bathing waters in the draft GWS Study Area (

Figure 5-7):

- Silverstrand beach IEWEBWC170_0000_0100
- Salthill beach IEWEBWC170_0000_0200
- Grattan Road Beach IEWEBWT170_0700_0100
- Ballyloughane Beach IEWEBWT170_0700_0200

Silverstrand and Salthill beaches have secured EU Blue Flag status and the National Green Coast Award. Protecting bathing water is crucial for public health and environmental sustainability. Clean water ensures safe swimming and reduces the risk of waterborne diseases, which can spread through contaminated water sources. The Galway City Development Plan 2023 – 2029 seeks to maintain and extend the Blue Flag Beaches status, which relates to water quality, infrastructure, and amenity provision for beaches in the city.

Shellfish waters

Shellfish waters are designated areas to protect the aquatic habitats of bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams. Ireland's Shellfish waters are

protected under the European Communities (Quality of Shellfish Waters) Regulations 2006 (S.I. No. 268 of 2006) (as amended). Ireland implements these objectives through the WFD's Programme of Measures, supported by Shellfish Pollution Reduction Programmes for designated areas²⁰. Shellfish waters must be protected from micropollutants and microbiological contamination – in particular, E. coli and Norovirus must be at safe levels before being discharged to the environment. The shellfish areas within the GWS SEA Coastal Study Area are Clarinbridge / Kinvara Bay, The Bay at Aughinish, and Ballyvaughan/Poul-na-clough Bay. Downstream of the Clarinbridge_030 river waterbody—into which the Athenry WwTP discharges—the Clarinbridge_050 river waterbody flows into the Dunbulcaun Bay transitional waterbody. Dunbulcaun Bay forms part of the Clarinbridge / Kinvara Bay shellfish area.

Salmonid Waters

Salmonid Waters are protected under the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988). Atlantic salmon are also protected through the EU Habitats Directive, where they are designated as qualifying interests of some European Sites. Within the draft GWS Study Area, the River Corrib (Corrib_010 and Corrib_020) are designated salmonid waters.

Fish

Fish need unpolluted water and abundant food in a healthy habitat that provides spawning areas, shelter and freedom of movement. The bed and soil of any surface water and the associated aquatic and riparian vegetation combine to provide the critical elements on which fish depend; gravel shoals or reed beds for spawning, pools and riffles where fish rest and feed, and turbulent reaches which enhance oxygenation. A healthy and sustainable fishery characterises and reflects a broader healthy ecology and a biodiverse and sustainable environment. Atlantic salmon, lamprey, European eel, and brown trout, as well as many marine fish species use the draft GWS Study Area at various stages of their lifecycles. Salmon and lamprey are protected under the EU Habitats Directive. The European Eel species is endangered at present, and additional protection measures have been introduced in that regard - it is incumbent on Ireland to ensure that the eel and its range and habitat are properly protected.

5.8.2. Future Trends

5.8.2.1. WFD Environmental Objectives

The Water Action Plan 2024, Ireland's third River Basin Management Plan, promotes the integration of flood risk management into wider water planning through a catchment-based approach²¹. The requirements to achieve "Good" or better status/potential for all waterbodies by 2027 is set out within chapter 5 of the Water Action Plan 2024. The plan explains that preventing deterioration in water quality involves ensuring that statutory and regulatory measures are applied in all areas and prioritised by risk to water quality. It also requires that new developments and land-use changes are properly assessed so that any necessary mitigation is put in place to

²⁰ Department of Housing, Local Government and Heritage (DHLGH). 2021. Shellfish Waters. Available at: [Shellfish waters](#). Accessed July 2025.

²¹ Department of Housing, Local Government and Heritage (DHLGH). 2024. Water Action Plan 2024. Available at: [Water Action Plan 2024](#). Accessed January 2026.

avoid negative impacts on water quality. In addition, the plan highlights the role of local authority planning and developments systems in providing transparency for the public where developments may affect water quality.

Article 11 of the WFD sets out the requirement for member states to establish a 'Programme of Measures' (PoMs). A PoM sets out the measures, or environmental improvements, intended to achieve the environmental objectives established under Article 4 of the WFD, by taking account of the results of analyses conducted under Article 5 of the WFD. These initiatives are intended to tackle any identified pressures or issues within the river basin and to encourage sustainable water management practices. Areas for Action (AFA) support the PoMs, as AFA are management units chosen because waterbodies in these areas are at risk of failing WFD objectives. Within an AFA, specific measures from the PoMs are prioritised and delivered — often through partnerships with local stakeholders, public bodies, and the Local Authority Waters Programme (LAWPRO), who work on behalf of local authorities.

5.8.2.2. Agricultural Policy and Water Protection

A significant proportion of water pollution arises from agricultural land. The Agricultural Sustainability Support and Advisory Programme (ASSAP) is working with farmers in a free and confidential advisory service to improve water quality. Where an agriculture-related pressure(s) has been identified as a pressure on a waterbody (through EPA-led and WFD-mandated assessment), the farmers in the area will receive the offer of a free farm visit from an ASSAP advisor. The purpose of the visit is to meet with the farmer and assess the farm for any potential issues that may be influencing the water quality in the local catchment. ASSAP has been extended for the full duration of this current Third River Basin Management Cycle. The dairy industry has increased the number of advisors involved in ASSAP by six for the period 2022 to 2027²².

For this current Third River Basin Management Cycle, Teagasc (Agriculture and Food Development Authority) will develop an online Farm Sustainability Plan for farmers, which will complement the existing Nutrient Management Planning online tool. The Water EIP project led by LAWPRO, in partnership with Teagasc and Dairy Industries Ireland will focus on reducing losses of phosphorus, nitrogen, sediment and, where relevant, pesticides to water from agricultural lands by promoting the adoption of innovative best practice in nutrient management, the application of nature-based solutions and other suitable measures. The project will aim to support up to 15,000 farmers in implementing on-farm water protection and mitigation measures.

Ireland's Nitrates Action Programme (NAP) gives effect to the Nitrates Directive 91/676/EEC, which governs the management of nitrates in agriculture to protect groundwater, rivers, lakes, estuaries and coastal waters. The Sixth NAP runs from 1 January 2026 to 31 December 2028, and has a focus on nutrient management, knowledge transfer & advisory services, and compliance & enforcement, through a range of regulatory and non-regulatory measures. The Sixth NAP builds on the progress made through the preceding programmes and includes a suite of new regulatory

²²Department of Housing, Local Government and Heritage (DHLGH). 2024. Water Action Plan 2024. Available at: [Water Action Plan 2024](#). Accessed: January 2026.

and non-regulatory measures focused on reducing the loss of nutrients to water quality through better nutrient management and distribution²³.

5.8.2.3. Local Community Initiatives

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

5.8.2.4. Urban Wastewater

The recast Urban Wastewater Treatment Directive (EU) 2024/3019 was recently finalised. The Department of Housing, Local Government and Heritage (DHLGH) is currently working on transposing it into Irish law, with a deadline set for 31 July 2027. An EU Member State is bound by an EU Directive even if it hasn't transposed it, but the effects are limited until transposition happens.

Updates to the Directive are designed to better protect the environment and public health, support the EU's climate goals and circular economy, and modernise urban wastewater management. These include:

- Wastewater collection and treatment now required for all urban areas $\geq 1,000$ population equivalents, down from the previous 2,000 threshold.
- Secondary treatment (removal of biodegradable organic matter) must be applied in all agglomerations $\geq 1,000$ PE.
- Tertiary treatment (nutrient removal e.g., nitrogen and phosphorus) becomes mandatory for larger plants (e.g., $\geq 150,000$ PE) by 2039.
- New Integrated Urban Wastewater Management Plans will be required for all agglomerations of 100,000 PE and above by 2033.
- For agglomerations between 10,000 PE and 100,000 PE, Integrated Urban Wastewater Plans are to be put in place where stormwater overflows or urban runoff pose a risk to the environment or public health by 2039.
- Measures are to be put in place to limit the pollution from stormwater overflows to no more than 2% of the annual collected urban wastewater load calculated in dry weather flow conditions, between 2027 and 2045.

²³ Department of Housing, Local Government and Heritage (DHLGH). 2026. Sixth Nitrates Action Programme (2026-2028). Available at: [Sixth Nitrates Action Programme \(2026 – 2028\) published](#). Accessed: February 2026.

- Extended producer responsibility for micro-pollutants sources

Uisce Éireann will continue its high rate of investment in wastewater infrastructure which will contribute to achieving full compliance with the Urban Wastewater Treatment Directive and the consequent reduction in pollutant loads to marine waters²⁴. The EPA highlighted urban areas (in December 2025) where treatment must be improved as a priority. Within the draft GWS Study Area, Athenry WwTP is required to be upgraded by 2031, due to significant pollution pressures on receiving waterbodies²⁵.

5.8.2.5. Marine Planning Reform

As part of implementing the EU Marine Spatial Planning Directive (2014/89/EU), Ireland's National Marine Planning Framework (NMPF) (2021) has been produced to provide guidance for activities and developments affecting the marine environment up to 2040. The NMPF provides policies for sustainable planning and management of marine resources, balancing ecological, economic and social objectives in relation to aspects such as the environment, biodiversity, commercial fisheries and renewable energy. As part of this, the NMPF includes specific objectives and planning policies related to water quality and to wastewater treatment and disposal.

The Maritime Area Planning Act 2021 (No. 50 of 2021) (as amended) creates a legal framework for marine planning and regulates the use of Ireland's maritime areas. The Maritime Area Regulatory Authority (MARA), established in July 2023, is Ireland's independent regulator for all activities in the maritime area, and authorises, regulates and oversees how Ireland's seas and seabed are used.

5.8.2.6. Impacts of climate change on the water environment

According to Ireland's State of the Environment Report 2024, the effects of climate change on Ireland's water resources will be wide-ranging and will create both acute and chronic challenges. The coastal waters around Ireland are projected to continue warming, and ocean acidity is expected to increase. Increased water temperatures will lead to additional in-channel vegetation growth, reduced oxygen availability, reduced aquatic habitat diversity and thermal stress to aquatic species. Changes in precipitation are expected to contribute to an increase in the frequency of flooding and drought events. This will affect water availability, as well as increasing run-off of pollutants from land and surface and sewer flooding, leading to pollution²⁶.

The Galway City Council Local Authority Climate Action Plan²⁷ outlines how historically there have been a broad range of extreme weather events which have had a severe impact on Galway City. Extreme weather events that occur in Galway City include coastal and storm erosion, heatwaves and drought, and flooding. Coastal erosion and coastal flooding events are common in Galway City. Projected sea level rise will increase the frequency of coastal inundation and erosion events and associated impacts. Historically, heatwaves and droughts have contributed to the imposition

²⁴ Department of Housing, Local Government and Heritage (DHLGH). 2024. Water Action Plan 2024. Available at: [Water Action Plan 2024](#). Accessed January 2026.

²⁵ Environmental Protection Agency (EPA). 2025. Wastewater Priority Areas. Available at: [Priority Areas List 2025](#). Accessed: January 2026.

²⁶ Environmental Protection Agency (EPA). 2024. Ireland's State of the Environment Report 2024. Available at: [Ireland's State of the Environment Report 2024](#). Accessed: January 2026.

²⁷ Galway City Council, 2024. Galway City Council Local Authority Climate Action Plan 2024-2029. Available at: [Climate Action Plan](#). Accessed: January 2026.

of restrictions on water supply, damage to road surfaces and have placed an increased demand on recreational areas in the city. During the winters of 2018 and 2022, prolonged cold spells and heavy snowfall events disrupted public transport networks and caused road closures. Projected increases in average temperature and decreases in the frequency of snowfall indicate a decrease in the frequency of cold spells, heavy snowfall, and their associated impacts. Most recently, river and pluvial flooding events in 2020 and 2021 had a range of impacts on Galway City, including damage to residential properties, closure of businesses, disruption to public services and closure of transport networks. Projected increases in the frequency of extreme precipitation events will result in increased surface water (pluvial) and riverine (fluvial) flood risk for Galway City²⁸. Pollutant runoff following flooding events can have negative impacts on water quality.

5.8.3. Key Considerations for Draft GWS and the SEA

This section summarises the key challenges and opportunities to be considered in the environmental assessment of the draft GWS in relation to the water environment.

Challenges

- The potential for Increased pressures such as climate change, agriculture, and invasive alien species on the aquatic environment affecting receiving waterbodies including rivers, lakes, transitional, coastal, and groundwater waterbodies. These pressures have potential to impact sensitive receptors including aquatic flora and fauna, the marine environment, recreational bathing waters, drinking water areas, shellfish waters, salmonid waters, designated European sites, and infrastructure that provides services such as wastewater treatment. These pressures are related to:
 - Climate change and increased frequency of drought periods, flooding, and coastal erosion
 - Water pollution from wastewater discharge and storm water
 - Water pollution from diffuse sources such as agriculture forestry and urban runoff affecting raw water quality
 - Planning of wastewater infrastructure for the draft GWS needs to be done within the constraints of the local receiving environment and in compliance with existing legislative requirements, including those under the WFD, to prevent deterioration of waterbody status.
- Discharges must comply with both surface and groundwater standards. In karst environments, such as the draft GWS Study Area, groundwater generally has extreme vulnerability to pollution, which is due to minimal attenuation and biodegradation of pathogens in the subsurface.

²⁸ Galway City Council (GCC). 2024. Galway City Council Local Authority Climate Action Plan (LACAP) 2024-2029. Available at: [Local Authority Climate Action Plan](#). Accessed: January 2026.

Opportunities

- Improved understanding of the pressures and their effects on the water environment through improved data, monitoring, knowledge sharing and making use of new digital and mapping technologies.
 - Stormwater management: Separating the wastewater and stormwater network, reducing the number of combined sewer overflows and potential to increase the use of Sustainable Urban Drainage Schemes (SUDS) in new development.
 - Wastewater management: Upgrading and maintaining wastewater treatment plants to address existing and new contaminants and to meet existing and future standards and protect the environment.
 - Collaboration with a range of stakeholders to address catchment-wide issues, including consideration of ecosystem services and the wider benefits of nature-based solutions and catchment management.
- Additional legal requirements stemming from the recast EU Urban Wastewater Treatment Directive will support the protection of all waterbodies.

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

5.9.1. Population Baseline Conditions

Population

The study area had a population of approximately 102,579²⁹ in 2022. The breakdown of population in different areas is summarised in **Table 5-5**. It is widely expected that the population of County Galway will increase, which will place additional wastewater infrastructure capacity pressure on the key Metropolitan settlements along with Athenry and Moycullen. Therefore, it is critical that the delivery of additional sustainable wastewater treatment infrastructure is forthcoming for County Galway to deliver in its role as one of the key drivers of economic growth in the northwest region.

Table 5-5: Population distribution in major towns within the study area

Major Towns within the study area	Population (2022)
Galway City and suburbs	85,910
Oranmore	5,819
Bearna	2,336
Athenry	4,603

²⁹ 2022 census population data obtained from the Central Statistics Office (CSO). Available at: [Census of Population 2022 - CSO - Central Statistics Office](#). Accessed: June 2025.

Major Towns within the study area	Population (2022)
Moycullen	2,279
Claregalway	1,632
Ireland	5,149,139 ³⁰

According to 2022 Central Statistics Office (CSO) data, the average age in the study area is 36.7, which is lower than the national average age of 38.4. A much larger proportion of people (about 26%) is found in the 20 – 34 age categories. The Census 2022³¹ reports that between 2016 and 2022, the population of Galway County grew by 8% to 277,737. The number of people aged 65 and over continues to grow, and between 2016 and 2022, this age group increased by 23% to 42,886 in Galway.

5.9.2. Economy and Employment Baseline Condition

According to data published in 2022, the unemployment rate of the major towns within the study area are summarised in **Table 5-6**³². The unemployment rate is calculated as the number of people unemployed or looking for their first job as a proportion of all people aged 15 years and over who were either at work, unemployed or looking for their first job.

Table 5-6: Unemployment rates in major towns within the study area

Major Towns within the study area	Unemployment Rate	Major Towns within the study area	Unemployment Rate
Galway City and suburbs	9.2%	Moycullen	6.1%
Oranmore	5.9%	Claregalway	8.0%
Bearna	4.7%	Galway County	7.2%
Athenry	7.2%	Ireland	8 %

Affluence and Deprivation

³⁰ Central Statistics Office (CSO). 2023. Census of Population 2022 – Summary Results. Available at: [Census of Population 2022 - Summary Results - Central Statistics Office](#). Accessed: June 2025

³¹ Central Statistics Office (CSO). 2023. Press Statement Census of Population 2022 – Summary Results Galway. Available at: [Press Statement Census of Population 2022 - Summary Results Galway - CSO - Central Statistics Office](#). Accessed: June 2025

³² Central Statistics Office (CSO). 2023. Census of Population 2022 Profile 7 - Employment, Occupations and Commuting - Map 3.2 Unemployment rates by town, 2022. Available at: [Unemployment Rates by Town 2022](#) Accessed: March 2026.

The Pobal HP Deprivation Index (Haase and Pratschke, 2017) is the core deprivation index for the Republic of Ireland. This index is based on the combination of three dimensions of relative affluence and deprivation: Demographic Profile, Social Class Composition, Labour Market Situation. The Index assigns a score to areas based on a national average of zero and ranging from approximately -40 (being the most disadvantaged) to +40 (being the most affluent). The Pobal HP Deprivation Index is Ireland's primary social gradient tool, used by numerous government departments and state agencies for the identification of geographic disadvantage, to target resources and services towards communities most in need. According to the latest data published in 2022³³, the HP Index of the major towns within the study area are summarised in **Table 5-7**. Locally, areas which scored below average are concentrated in the city centre in pockets at Newcastle, Shantalla, and Mervue, with unemployment rates at Newcastle of 16.19% for male and of 10.73% for females.

Table 5-7: HP Index in major towns within the study area

Major Towns within the study area	HP Index	HP Description	Major Towns within the study area	HP Index	HP Description
Galway City and suburbs	-7.45 (Newcastle) to 10.64 (Ballybrit)	Marginally below Average to Affluent	Athenry	4.09	Marginally above Average
Oranmore	8.63	Marginally above Average	Moycullen	10.04	Affluent
Bearna	10.38	Affluent	Claregalway	4.85	Marginally above Average

5.9.3. Commercial Baseline Condition

According to the Regional Spatial and Economic Strategy 2020-2032 (RSES) for the Northern and Western region³⁴, Galway City has an extensive reach and is located at a pivotal location along the Atlantic Economic Corridor, from where the influence of Ireland's southern cities (Cork and Limerick) extends northwards to the Regional Growth Centres of Sligo and Letterkenny in the North-West. Galway City is home to existing internationally recognised world-class clusters in Medical Devices and Information and Communications Technology (ICT), including 9 of the top 10 ICT companies. It is becoming a major technology hub, particularly around internet and collaborative working technologies. Various third-level institutions are located within the city, providing for a highly educated and vibrant workforce. The RSES also states that the agri-food sector is the largest indigenous industry in Ireland, employing 8.4% of the working population and achieving revenues of approximately €26 billion as of 2015. As an export-orientated industry, and

³³ Tailte Éireann. 2026. Pobal HP Deprivation Indices. Available at: [Pobal HP Deprivation Indices](#) Accessed: March 2024

³⁴Northern and Western Regional Assembly, 2020. Regional spatial and economic strategy 2020-2032. Available at: [REGIONAL SPATIAL AND ECONOMIC STRATEGY 2020-2032](#). Accessed January 2026.

one that is primarily based within the rural regions, the agri-food sector will continue to play an essential role in the rural economy, especially so within the Northern and Western Region.

5.9.4. Tourism and Recreation Baseline Condition

Tourism is one of Ireland's most important economic sectors, and Galway generated €589 million in revenue from overseas visitors in 2017. According to the Galway Tourism Strategy 2020-2025³⁵, Galway City attracted 1.674 million overseas visitors and 1.024 million domestic visitors in 2017. Overseas visitors come from Mainland Europe (44%), North America (32%), Great Britain (16%), and other areas (9%). Galway is known for its strong cultural identity and rich heritage, rooted in its unique landscapes, vibrant bilingual character, and diverse festivals and events across the city.

Of tourism activities, the use of beaches and water-based activities is pertinent to this assessment. The use of the local environment is changing, with swimming now increasingly becoming a year-round activity. The overall quality of Ireland's bathing water is high with 96% of the 151 identified bathing waters meeting or exceeding the required minimum standard of sufficient. Urban wastewater was most frequently reported as the likely cause of incidents affecting bathing waters in 2024. Other reported causes included agricultural runoff, contamination from animals/birds and pollution entering the surface water collection system through misconnections or runoff from urban areas³⁶. **Table 5-8** summarises the water quality of the four beaches within the study area (**Figure 5-7**)³⁷. The main reason for beach restriction/closure is due to the risk of deterioration in water quality due to expected heavy rainfall or due to a deterioration in water quality, often due to urban surface water runoff.

Table 5-8: Water quality of the Recreational Bathing Waters within the GWS study area

Bathing Locations	Description	Water Quality		Number of Restriction in 2023 (Days)	
		2023	2024	2023	2024
Ballyloughane Beach IEWEBWT170_0700_0200	Particularly popular among the residents of Renmore.	Excellent	Excellent	32	17
Grattan Road Beach IEWEBWT170_0700_0100	Popular neighbourhood bathing area in the city and is the closest beach to the city centre.	Good	Good	28	20

³⁵ Galway County Council, 2020. Galway Tourism Strategy 2020-2025. Available at: [Galway Tourism Strategy 2020 2025 \(1\).pdf](#). Accessed June 2024.

³⁶ Environmental Protection Agency (EPA). 2024. Bathing Water Quality in Ireland 2024. Available at: [Bathing water quality in Ireland in 2024 | Environmental Protection Agency](#). Accessed: February 2026.

³⁷ Beaches.ie. 2026. Love you Beach. Available at: [Beaches.ie - Find the best lake and sea swimming near you](#). Accessed: July 2024.

Bathing Locations	Description	Water Quality		Number of Restriction in 2023 (Days)	
		2023	2024	2023	2024
Salthill Beach IEWEBWC170_0000_0200	Swimming and bathing are popular activities on this beach.	Excellent	Excellent	0	0
Silverstrand Beach IEWEBWC170_0000_0100	Used year-round for swimming and windsurfing and can receive up to 600 visitors per day during high season.	Excellent	Excellent	13	9

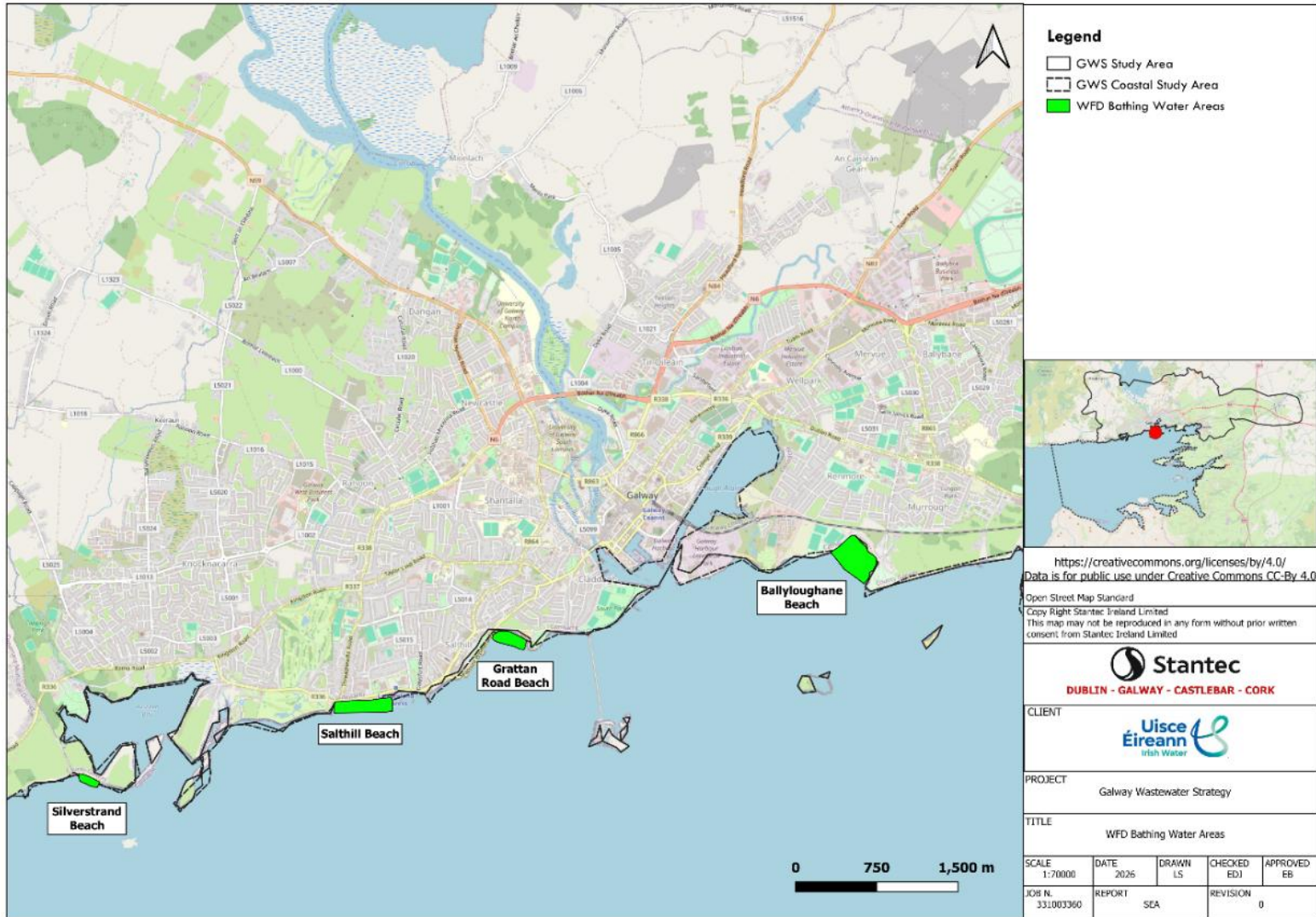


Figure 5-7: Recreational Bathing waters in the draft GWS Study Area

5.9.5. Human Health Baseline Condition

The draft GWS study area is in EU nomenclature of territorial units for statistics (NUTS3) area of West Ireland. In 2016, West Ireland had a slightly higher life expectancy for male (~79.7) and female (~84.5) compared to the national average (male: 79.6; female: 83.4)³⁸. A cross-government initiative called the Wellbeing Framework (WBF) for Ireland has been developed, which aims to measure and improve the quality of life for people in Ireland, with a particular emphasis on sustainability and equality. Across the four indicators in the environment, climate and biodiversity dimension, the amount of waste generated, pollution, grime and other environmental problems perform negatively in terms of trend and good quality water declined slightly. Although Ireland's greenhouse gases are decreasing, when compared with other EU countries, Ireland has the highest greenhouse gas (GHG) emissions in tonnes per capita³⁹.

5.9.6. Future Trend

An expected growth in population will bring opportunities and challenges to the region. The Galway County Development Plan 2022-2028⁴⁰ outlines how the Galway Metropolitan Area will be the driver of sustainable growth in the Northern and Western Region, providing a choice of housing typologies together with excellent public transport, employment, community, leisure and amenity facilities in a healthy environment that will attract the critical mass of population needed to support the establishment of strong local communities and ensure a strong local and regional economy. The Galway Metropolitan Area straddles the Strategic Economic Corridor (between Oranmore and Athenry) and the Atlantic Economic Corridor (AEC) (Kerry to Donegal), which support employment and development in Galway.

Project Ireland 2040 - The National Planning Framework (NPF) plans for Galway growing by at least 50% by 2040 - to become a city of scale. Its National Policy Objective 3b requires at least 50% of new homes in Galway City and suburbs to be delivered within the existing built-up area. A Metropolitan Area Strategic Plan (MASP) will guide the strategic and regeneration-led development of the Galway Metropolitan Area. Key growth enablers include the Galway City Ring Road, upgrades to water supply and wastewater infrastructure, infill and regeneration to intensify development and employment, and the sustainable development of new greenfield areas supported by public transport and infrastructure⁴¹. The draft GWS is a key piece of ensuring that water supply and wastewater needs are met by new national projects to enhance Galway's water supply and increase wastewater treatment capacity that is needed to secure the future sustainable growth and development of the Metropolitan Area. Other critical pieces of infrastructure that are required to secure the development of the Metropolitan Area include the provisions set out within the Galway Transport Strategy.

³⁸ Central Statistics Office (CSO). 2020. Irish Life Tables 2015 – 2017. Available at: [Irish Life Tables 2015 - 2017](#). Accessed: July 2024

³⁹Rialtas na hÉireann. 2025. Understanding Life in Ireland: The Well-Being Framework 2025. Available at: [The Wellbeing Framework 2025](#). Accessed: January 2026.

⁴⁰ Galway County Council. 2022. Galway County Development Plan 2022 – 2028. Available at: [Adopted Galway County Development Plan 2022-2028](#). Accessed: July 2024

⁴¹ Rialtas na hÉireann. 2018. Project Ireland 2040 National Planning Framework (NPF). Available at: [Project National Planning Framework \(NPF\) 2040](#). Accessed January 2026.

Promotion of rail travel, including a planned upgrade at Oranmore Station will increase the frequency of rail services, and will be a key growth enabler that will facilitate compact urban living and reduce private car dependency. Regional Policy Objective (RPO) 3.6.9. of the Regional Spatial and Economic Strategy (RSES) for the Northern & Western Region of Ireland states that the Assembly supports the provision of a dual railway track between Galway and Athlone as a medium to long-term objective⁴². These infrastructure improvements would provide a range of benefits for the Galway Metropolitan Area. The greater emphasis on future development being more focused towards brownfield sites and urban areas providing greater access to green spaces. As identified in RPO 3.6.13 of the RSES, there is support for the delivery of a strategic Greenway Network for the areas to include the National Dublin to Galway Cycleway, Oranmore to Bearna Coastal Greenway and the Galway to Clifden Greenway.

According to Ireland's State of the Environment Report 2024, engagement and contact with our natural environment is associated with measurable improvements in the health and wellbeing of the population with a range of benefits for our health, both physically and mentally. Nature-based solutions (NBS) are a key tool in helping to address climate change, biodiversity loss and environmental pollution while simultaneously benefiting human health, societal wellbeing, and urban prosperity. NBS have gained much momentum and focus in recent years as multifunctional solutions for addressing socio-environmental challenges and benefiting both human wellbeing and biodiversity⁴³. The Department of Housing, Local Government, and Heritage have produced national guidance to assist local authorities and planning professionals with NBS for the management of rainwater and surface water run-off in urban areas⁴⁴.

5.9.7. Key Considerations for the Draft GWS and the SEA

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

Challenges

- Population growth within the study area has potential to increase demands on the existing wastewater infrastructure, and to increase the geographical extent of serviced lands
- Potential for construction works and wastewater treatment plant operations to affect water quality, with possible impacts on estuarine and marine waters, fish and shellfish stocks, related livelihoods, human health, recreation, and tourism.
- Wastewater infrastructure should be resilient enough to accommodate seasonal pressures related to tourism and recreation activities. This required strong

⁴² Northern and Western Regional Assembly (NWRA). 2020. Regional Spatial and Economic Strategy (RSES) 2020 – 2032. Available at: [NWRA - RSES 2020 - 2032](#) Accessed: July 2024.

⁴³ Faivre, N., Fritz, M., Freitas, T., de Boissezon, B., & Vandewoestijne, S. 2017. Nature-Based Solutions in the EU: Innovating with nature to address social, economic and environmental challenges. Environmental Research. Volume 159 Pages 509-518. Available at: [NBS in the EU](#)

⁴⁴ Department of Housing, Local Government and Heritage (DHLGH). 2021. Nature-Based Solutions the Management of Rainwater and Surface Water Runoff in Urban Areas. Available at: [NBS Solutions to Management of Rainwater and Surface Water Run Off](#). Accessed: January 2026.

communication and collaboration with key stakeholders to develop actions and mechanisms that provide for sustainable wastewater treatment.

Opportunities

- There are opportunities for programmes and initiatives (such as Catchment Management Plans and Nature Based Solutions) to improve water quality and prevent or reduce pollutant load in the source waters, providing wider benefits to the environment.

5.10 Climate Change

The European Climate Law (Regulation 2021/1119) sets the goal for Europe's economy and society to become climate neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas (GHG) emissions by at least 55% by 2030, compared to 1990 levels⁴⁵. Climate neutrality by 2050 means achieving net zero GHG emissions for all EU countries combined, mainly by cutting emissions, investing in green technologies and protecting the natural environment. Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels with a likely range of 0.8°C to 1.2°C. At current levels of global GHG emissions, the world remains on course to exceed the Paris Agreement's temperature thresholds of either 1.5°C or 2°C above pre-industrial levels⁴⁶.

The Climate Action Plan 2025 (CAP25)⁴⁷ is the third plan prepared under the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)) and sets out the latest assessment of progress and achievements over the past year, building on measures implemented in previous years. The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government.

Reports from the Intergovernmental Panel on Climate Change reinforced the urgent need for greater action on climate adaptation globally⁴⁸. Observations show that Ireland's climate is changing in terms of sea level rise, increases in average temperature, changes in precipitation patterns, and weather extremes. Climate change is expected to have diverse and wide-ranging impacts on Ireland's environment, society, and economic development, including on managed and natural ecosystems, water resources, agriculture and food security, human health, and coastal zones. The most immediate risks to Ireland from climate change are predominantly those associated with changes in extremes, such as floods, droughts, and storms.

⁴⁵ European Union - European Commission. European Climate Law. Available at: [European Climate Law - Climate Action](#). Accessed: March 2026.

⁴⁶ Environmental Protection Agency (EPA). 2023. Land Use Review: Fluxes, Scenarios and Capacity Synthesis Report. Available at: [Land Use Review - EPA Research Evidence Synthesis Report](#). Accessed: June 2025

⁴⁷ Rialtas na hÉireann. 2025. Climate Action Plan (CAP) 2025. Available at: [CAP25 Main Report](#). Accessed: February 2025.

⁴⁸ Intergovernmental Panel on Climate Changes (IPCC). 2022. Climate Change 2022: Impacts, Adaptation and Vulnerability. Available at: [IPCC 2022 Climate Change 2022 Contribution of Working Group II](#). Accessed: January 2026.

5.10.1. Climate Change Baseline Conditions

Studies of the climate record in Ireland show that the long-term prevailing weather conditions are changing⁴⁹. The last century was characterised by an upward trend in temperatures, resulting in warmer, winter winters and hotter, drier summers, accompanied by an increase in extreme weather events and this pattern is likely to continue^{50,51}. **Table 5-9** summarises the observed Climate Change in Galway and Ireland in the last century^{52, 53}.

Table 5-9: Observed climate change in Galway and Ireland

Parameters	Observed Impact
Temperatures	<ul style="list-style-type: none"> Increased by 0.8°C; an average of 0.07°C per decade Highest Temperature on record recorded in 2022 at Athenry
Number of frost days	<ul style="list-style-type: none"> Decreased
Growing Season	<ul style="list-style-type: none"> Extended (Beginning one week earlier)
Rainfall	<ul style="list-style-type: none"> Increased by 5% since the mid-twentieth century Average annual rainfall at Corrandulla, Galway has increased by 3% for the most recent period (1981 – 2010) compared to the 1961 – 1990 baseline
Dry Period	<ul style="list-style-type: none"> More frequent
Temperature and acidity of Sea	<ul style="list-style-type: none"> Increased (>1°C higher than in the mid-twentieth century and sea acidity is 30% higher globally)
Sea Level	<ul style="list-style-type: none"> Risen by 2-3mm per year around Irish coast since the 1990s; mean wave heights along the SW coast have increase by 0.8m per decade During Storm Eleanor (2018), water level rose 90cm above the base of the Spanish arch, flooding many parts of Galway city
Number of Intensity Storms in the North Atlantic	<ul style="list-style-type: none"> Increased by 3 per decade per 1950
Relative humidity	<ul style="list-style-type: none"> Slightly increased in summer and decreased in winter in the period since 1991

According to Galway City Council Local Authority Climate Action Plan 2024-2029³³, a broad range of historical extreme weather events have had severe impacts on Galway City. Most recently, river

⁴⁹ Dwyer, N.2013. The Status of Ireland's Climate. Environmental Protection Agency (EPA). Available at: [Status of Ireland's Climate 2012](#). Accessed: June 2025

⁵⁰ Nolan, P. 2015. EPA Report No. 159: Ensemble of Regional Climate Model Projections for Ireland. [EPA-159 Ensemble of Regional Climate Model Projections](#). Accessed: June 2025

⁵¹ Department of Climate, Energy, and the Environment. 2025. National Adaption Framework: Planning for a Climate Resilient Ireland. Available at: [National Adaptation Framework \(NAF\)](#). Accessed: Jun 2025.

⁵² Department of Housing, Local Government, and Heritage (DHLGH). 2025. Built & Archaeological Heritage – Climate Change Sectoral Adaption Plan. Available at: [Climate Change Sectoral Adaption Plan](#). Accessed: March 2026.

⁵³ Galway City Council, 2024. Galway City Council Local Authority Action Plan 2024-2029. Available at: [GCC LCAP 2024 - 2029](#). Accessed February 2026.

and pluvial flooding events in 2020 and 2021 demonstrated a range of impacts for Galway City. These impacts included damage to residential properties, closure of businesses, disruption to public services and closure of transport networks. Projected increases in the frequency of extreme precipitation events may result in increased surface water and riverine flood risk for Galway City. Coastal erosion and coastal flooding events are common in Galway City. Events in 2020 and 2021 resulted in disruption of transport networks and damage to coastal habitats. Projected sea level rise may increase the frequency of coastal inundation and erosion events and associated impacts. Historically, heatwaves and droughts have contributed to the imposition of restrictions on water supply, damage to road surfaces and have placed an increased demand on recreational areas in the city. During the winters of 2018 and 2022, prolonged cold spells and heavy snowfall events disrupted public transport networks and caused road closures. Projected increases in average temperature and decreases in the frequency of snowfall indicate a decrease in the frequency of cold spells, heavy snowfall, and their associated impacts.

5.10.1.1. Flood Risk within the draft GWS Study Area

The frequency of flood events in Ireland has been increasing in recent years and floods are likely to become more frequent and unpredictable with climate change. All of Ireland's major cities are coastal and vulnerable to sea-level rise, which poses significant economic, social, and environmental risks, including flooding of water and wastewater infrastructure and disruptions to power and transport access. Flooding can cause pressure on drains and sewers, affecting wastewater treatment plant operation, and cause the release of untreated stormwaters, which affect water quality. Flood events also increase the runoff of nutrient-rich sediments from agricultural and forestry land, as well as urban runoff in developed areas, which further affects water quality.

The Floods Directive (2007/60/EC) on the assessment and management of flood risks requires Member States to assess all water courses and coastlines for flood risk, to map the flood extent, assets, and humans at risk in these areas, and to take adequate and coordinated measures to reduce this flood risk. It supports protecting water bodies from flooding by aligning with national flood risk management plans. Under the Directive, Ireland must deliver structural flood protection measures for communities identified as being at significant flood risk through the National Catchment Flood Risk Assessment and Management (CFRAM) Programme, reducing both the likelihood and severity of flooding.

The EU (Assessment and Management of Flood Risks) Regulations 2010 (S.I. No. 122 of 2010) (as amended) transposed the Floods Directive in Irish law. The Office of Public Works (OPW) is the competent authority responsible for co-ordinating Ireland's whole of Government approach to flood risk management. The OPW has been implementing the Directive mainly through the Catchment-based Flood Risk Assessment and Management (CFRAM) Programme⁵⁴. Areas for Further Assessment (AFAs) are areas where, based on Preliminary Flood Risk Assessment, the risks

⁵⁴ Office of Public Works (OPW). Catchment Flood Risk Assessment and Management Programme. Available at: [Flood Plans - OPW Flood Risk Management \(floodinfo.ie\)](#). Accessed: March 2026.

associated with flooding are potentially significant, and these areas are the focus of CFRAM Studies. AFAs identified in the draft GWS Study Area are Galway City, Oranmore, Claregalway, and Athenry. **Figure 5-8** shows areas of fluvial or coastal flooding RISK within the GWS study area. Areas in the GWS Study Area with medium and high groundwater flooding have been identified in **Figure 5-9**.

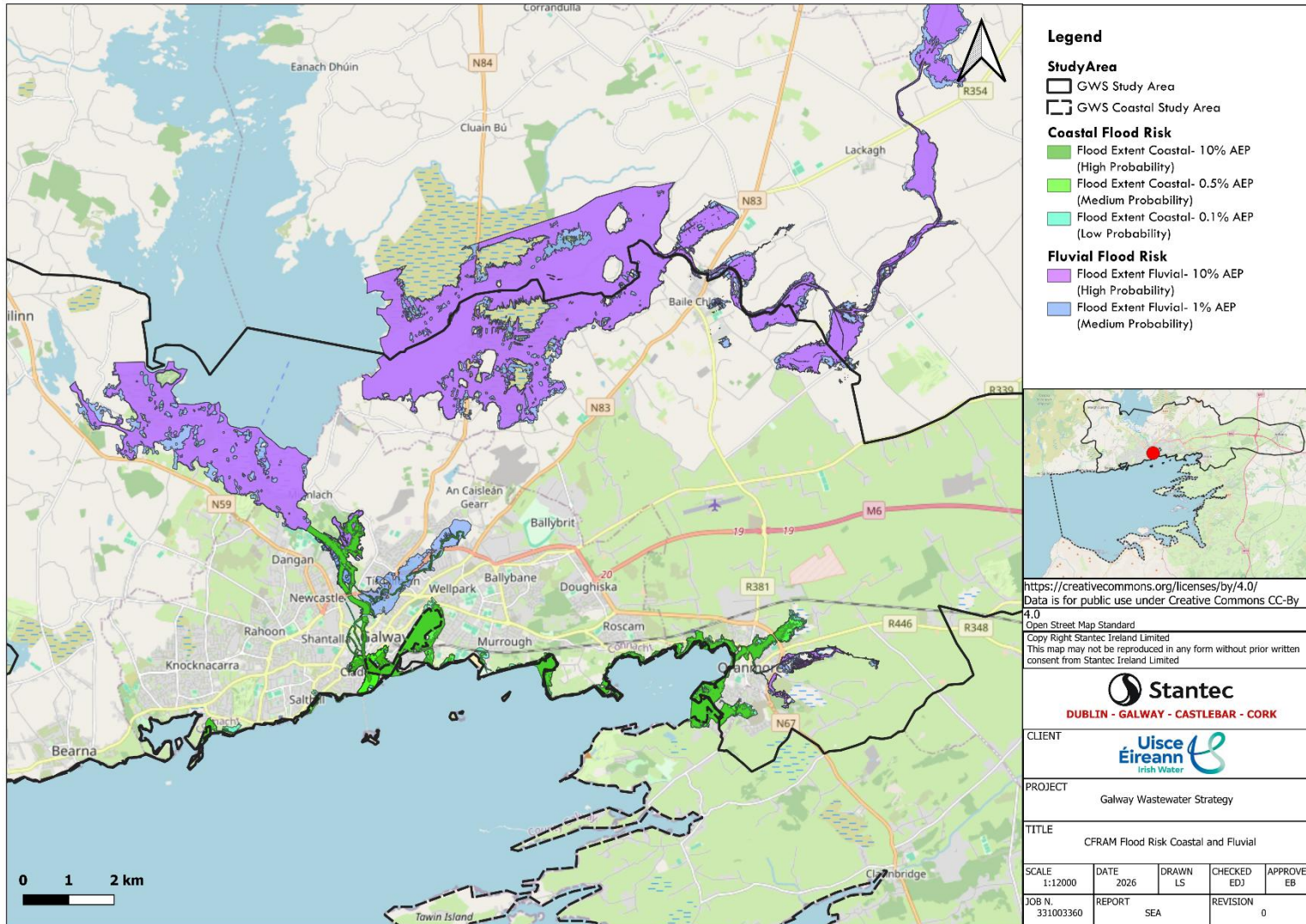


Figure 5-8: CFRAM Coastal and Fluvial flood risk in the draft GWS Study Area

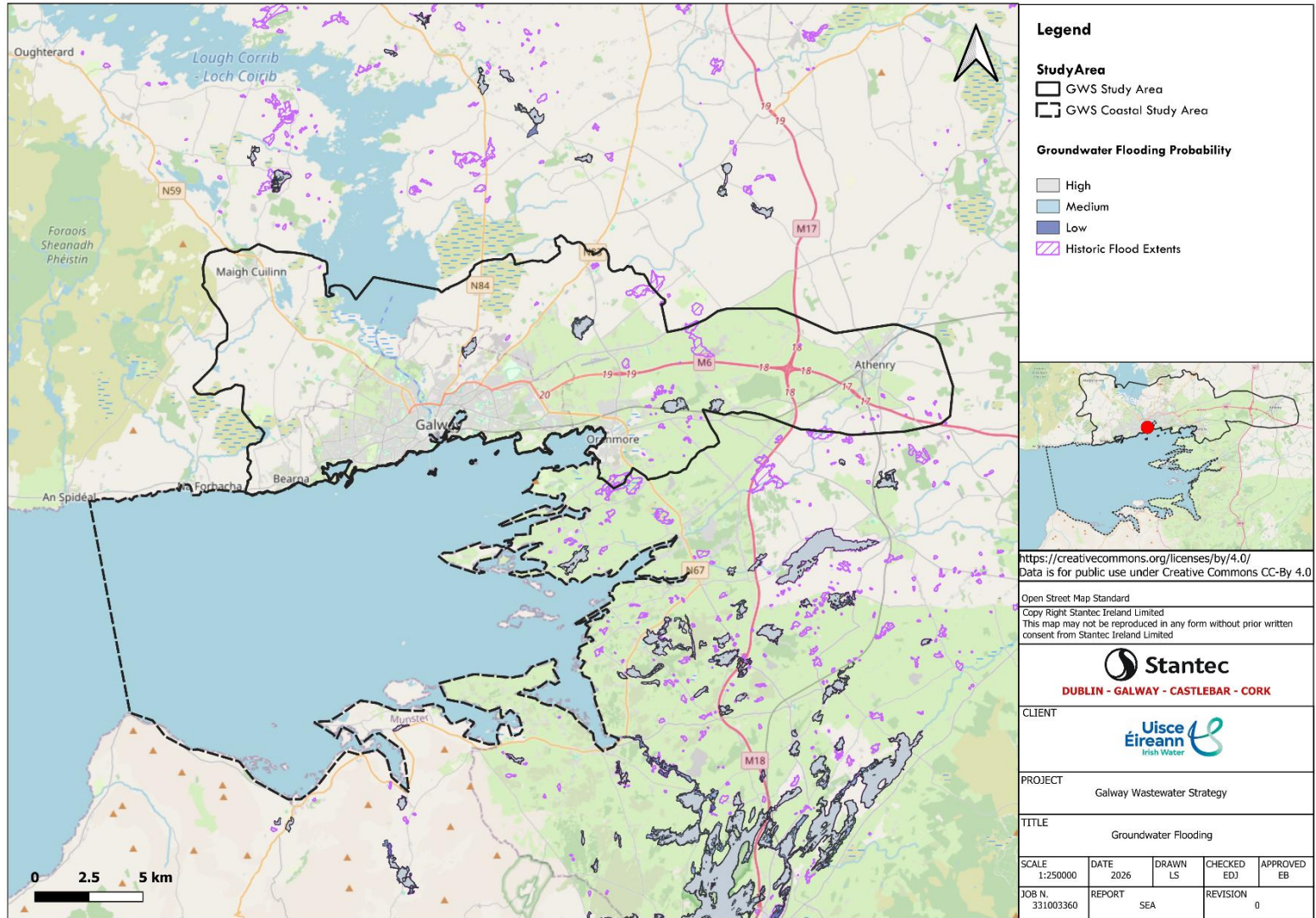


Figure 5-9: Groundwater Flooding Probability in the draft GWS Study Area

5.10.2. Future Trends

Climate change is expected to have diverse and wide-ranging impacts on Ireland's environment, society, and economic development, including on managed and natural ecosystems, water resources, agriculture and food security, human health, and coastal zones. The most immediate risks to Ireland from climate change are predominantly those associated with changes in extremes, such as floods, droughts, and storms. The National Adaptation Framework (NAF) 2024⁵⁵ reflects the increasingly important role of adaptation in addressing climate change impacts and underpins the development of a new cycle of Sectoral Adaptation Plans. The NAF 2024 identified 12 key sectors that would require Sectoral Adaptation Plans grouped under four themes: (1) Natural Environment, which comprises landscapes, seascapes, ecosystems, plant and animal life within Ireland and its ocean territory, (2) Built Environment and Infrastructure, which comprises human-made surroundings, structures, and any supporting infrastructure created using material, spatial, and human resources, (3) Human, which relates to people's physical and mental health (human); the norms, rules and institutions of society (social); and the knowledge, heritage, beliefs, arts, morals, laws, customs that infuse society (cultural), and (4) Economy, which relates to the production and consumption of goods and services, as well as the financial and economic systems that enable this. According to the Built & Archaeological Heritage – Climate Change Sectoral Adaption Plan 2025⁵⁶, the projected climate change impacts in Ireland by 2060 are summarised in **Table 5-10**.

Table 5-10: Predicted climate change in Ireland

Parameters	Observed Impact
Temperatures	Increased by 0.8°C; an average of 0.07°C per decade
Number of frost days	Decrease further by 50% for the medium to low emission scenario and by 60% for the high emission scenario
Growing Season	Extend further by 35 – 40 days
Rainfall	Increase; The number of 'very wet day' (≥30mm rain / day) will increase by 30% during winter months
Dry Period	Drier in summers. Rainfall volume will reduce by 20%; The number of dry periods will increase by up to 40%

⁵⁵Department of the Environment, Climate and Communications (DECC). 2024. National Adaptation Framework – Planning for a Climate resistant Ireland. Available at: [National Adaption Framework 2024](#). Accessed January 2026.

⁵⁶ Department of Housing, Local Government, and Heritage 2025. Built & Archaeological Heritage – Climate Change Sectoral Adaption Plan 2025. Available from: [Climate Change Sectoral Adaption Plan 2025](#). Accessed January 2026.

Parameters	Observed Impact
Temperature and acidity of Sea	Rise by 1.9°C (Irish Sea) by the end of century.
Sea Level	Rise by up to 800mm by 2100; Storm surge will increase; Atlantic coastal retreat rates are likely to increase from current 0.5 – 1m per year
Number of Intense Storms in the North Atlantic	Increase in the North Atlantic and over Ireland. Extreme wind speeds will increase slightly, particularly in winter
Extreme wind speeds will increase slightly, particular in winter	Increase during winter; Decrease in summer (mainly in the south and east)

In line with global trends, it is forecasted that the frequency and intensity of some hazards (e.g., coastal, river and pluvial flooding, coastal erosion, heatwaves, and drought) will increase while others will remain the same (for example, severe windstorms). These changes are projected to continue and intensify with a wide range of impacts for Galway City and Galway City Council⁵⁷. Galway City will also change in terms of its population, which will potentially affect the exposure and vulnerability of people and assets within the city. Government policy and international goals indicate significant cuts in GHG emissions will start to take place throughout the 2020s as progress is made towards halving Ireland's emissions by 2030 and reach net zero by no later than 2050, as per the Climate Action Plan. There will likely be a delay between emissions cuts and a slowdown in warming; even if the world became carbon neutral tomorrow, the climate would continue changing for years or decades.

Figure 5-10 outlines the change in the climate risk matrix for Galway City⁵⁸. The hollow marker shows the current risk, and the solid marker shows the future risk. The dotted line shows the change between the current and future risk.

Table 5-11 summarises projected changes per climate hazard for Galway City extracted from the Galway City Climate Risk Assessment report⁵⁹.

⁵⁷ Galway City Council. 2024. Galway City Council Local Authority Climate Action Plan 2024-2029. Available at: [Climate Action Plan | Galway City Council](#). Accessed January 2026.

⁵⁸ Galway City Council. 2024. Galway City Council Local Authority Climate Action Plan 2024-2029. Available at: [Climate Action Plan | Galway City Council](#). Accessed January 2026.

⁵⁹ Galway City Council, 2023. Galway City Council Climate Change Risk Assessment. Available from: [Climate Change Risk Assessment Report](#). Accessed January 2026.

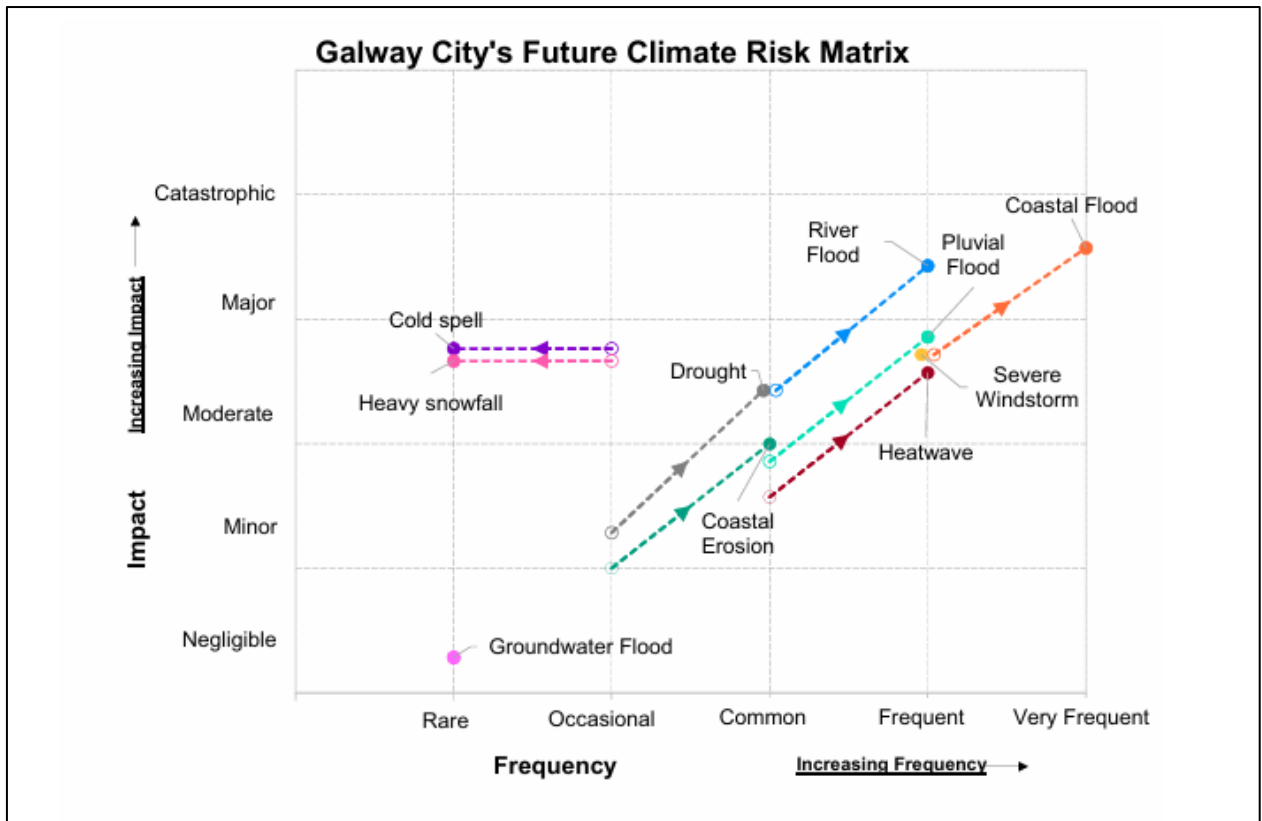


Figure 5-10: Climate risk matrix for Galway City⁶⁰

Table 5-11: Projected changes per climate hazard

Hazard	Future Frequency	Projected Change
Heatwave	Frequent	Overall increase in average temperature of between 1.1 and 1.4°C for Galway City relative to the 1981-2000 period. Under a high emission scenario, projections indicate that heatwaves will become more frequent (bottom middle) by mid-century.
Drought	Common	Summer rainfall is expected to reduce by between 6% and 8% in the future when compared with the baseline period of 1981 to 2000, in both the RCP4.5 and RCP8.5 scenario contributing to potential drought conditions.

⁶⁰ Galway City Council. 2024. Galway City Council Local Authority Climate Action Plan 2024-2029. Available at: [Climate Action Plan | Galway City Council](#). Accessed January 2026

Hazard	Future Frequency	Projected Change
Cold Spell	Rare	Decrease in the number of frost days and ice days in the 2041-2060 future period when compared with the baseline period of 1981-2000, is projected for both the RCP4.5 and RCP8.5 scenario.
Heavy Snowfall	Rare	The annual snowfall in the region is projected to decrease substantially by the middle of the century for the RCP4.5 and RCP8.5 scenarios.
Severe Windstorms	Frequent	Average wind speed will remain similar to those currently experienced. There is limited evidence of a potential increase in the frequency of more intense storms which are currently rare events. More research is required in this space.
Coastal Flooding	Very Frequent	Rising sea levels projections under a high emissions scenario indicate an increase of up to 0.24 m by 2050 which will increase the frequency of coastal inundation.
Coastal Erosion	Common	A rising sea level is strongly linked with coastal erosion and an increase in erosion rates and extent.
Fluvial Flooding	Frequent	Increase in the frequency of heavy rainfall days (days with precipitation >30mm) for Galway City with some areas projected to see increase of up to 37% (bottom right). This will likely result in an increased frequency of associated fluvial and pluvial flooding.
River Flooding	Frequent	
Groundwater Flooding	Rare	Projections of changes in groundwater flooding are currently not available, therefore there is uncertainty in the change in groundwater flooding frequency that can be expected.

5.10.3. Key Considerations for the Draft GWS and the SEA

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

Challenges

Climate change will have direct and indirect influence on Uisce Éireann and the services it provides, which create the following challenges.

- Higher temperatures are likely to affect rivers and coastal waters, increase the vulnerability of aquatic ecosystems to pollution, and potentially requiring new wastewater treatment practices and advanced clean water technologies.
- The potential for more frequent extreme weather and heavier rainfall will increase flooding and soil erosion, affecting water quality, while existing physical assets will face greater pressure from higher flows, temperatures, and increased fluvial and coastal flood risk.
- Regulatory and policy commitments and compliance requirements on carbon emission targets and improving climate change resilience will have implications on operations and projects.
- Given the location of Mutton Island WwTP, it is vulnerable to sea level rise and the increase in intensity and frequency of storms. Increased sea levels will exacerbate the existing problem of tidal infiltration into the collection network. Increased rainfall intensity is going to add more stormwater to the combined sewers. These pressures will add to the hydraulic loading on Mutton Island WwTP and, particularly if large amounts of seawater gets into the network, its biological treatment capacity will be impaired.
- Climate change will place additional demands on the wastewater system and increase the risk of flooding and the use of stormwater overflows.

Opportunities

- Opportunities to achieve wider environmental benefits, infrastructure and service resilience and cost efficiency alongside contributing to meeting climate targets.
- Integration of biodiversity and climate change monitoring into programme and infrastructure management to help guide adaptive decision making.

5.11 Biodiversity, Flora and Fauna

Biodiversity in Ireland is facing ongoing pressures which have the potential to cause further deterioration to the condition and health of habitats and species. According to Ireland's 4th National Biodiversity Action Plan⁶¹, the main drivers of biodiversity loss are intensive agricultural and forestry practices, overfishing, invasive species, changes in land use (particularly for residential, agricultural and commercial development) and the over-exploitation of resources such as peatland loss. The 2025 conservation status assessments reported that 90% of habitats remain in unfavourable status, with half showing ongoing declines⁶². The report notes that many pressures on nature remain persistent, notably nutrient pollution, invasive and problematic species and the legacies of drainage and land-use change. The EPA's latest water quality report (using data collected between 2019 and 2024) determined that 48% of the surface water bodies in Ireland are not as ecologically healthy or resilient as they should be. The number of water bodies

⁶¹ Department of Housing, Planning and Local Government (DHPLG). 2024. Ireland's 4th National Biodiversity Action Plan 2023-2030. Available at: [4th-national-biodiversity-action-plan.pdf](#). Accessed January 2026.

⁶² National Parks and Wildlife Service (NPWS). 2025. The Status of EU Protected Habitats and Species in Ireland. Available at: [Status of Habitats and Species in Ireland NPWS](#). Accessed: March 2026.

in satisfactory condition (high or good status) across rivers, lakes, estuaries and canals has declined since the last assessment which covered the period 2016-2021⁶³. These water quality declines have major consequences for biodiversity, with many freshwater species, such as the freshwater pearl mussel and Atlantic salmon affected.

5.11.1. Biodiversity, Flora and Fauna Baseline Condition

5.11.1.1. Protected Areas - European Sites

Under the EU Habitats Directive 92/43/EEC, areas designated for the conservation of flora, fauna, and habitats of European importance (Annex I habitats and Annex II animal and plant species) are referred to as Special Areas of Conservation (SACs). SACs are designated for their Qualifying Interests (QI), Annex I habitats and Annex II species (except bird species) and the habitats on which they rely (including functionally linked habitats). Under the EU Birds Directive 2009/147/EC, sites which are designated for the protection and conservation of bird species and their habitats of European importance are referred to as Special Protected Areas (SPAs). SPAs are designated for Special Conservation Interest (SCI) resident birds and migratory birds designated under Annex I of the Birds Directive, and their supporting habitats. The specific named bird species for which SPAs are selected are referred to as Special Conservation Interests (SCI). SACs and SPAs within the draft GWS study area are illustrated in **Figure 5-11**. SACs and SPAs form part of Natura 2000, a network of protected areas (known in Ireland as European sites) throughout the European Union.

The overall aim of the EU 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.

The EU Habitats Directive is transposed in Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended) (consolidating the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in recent *Court of Justice of the European Union* (CJEU) Judgements) (hereafter referred to as the Habitats Regulations) and the Planning and Development (Amendment) Act 2000, as amended. For projects that require planning permission, it is the Planning and Development Act and associated Regulations which transpose the requirement for Appropriate Assessment.

An AA screening has been carried out of the draft GWS study area and the Zone of Influence (Zoi) of the Strategy, which was determined using the Source - Pathway - Receptor model.

⁶³ Environmental Protection Agency (EPA). 2025. Water Quality in Ireland 2019-2024. Available from: [Water Quality in Ireland 2019-2024 | Environmental Protection Agency](#). Accessed December 2025.

AA Screening Findings

According to AA Screening report submitted in April 2024, a screening assessment was carried out of impact pathways to European sites within the determined zone of influence of the draft GWS Study Area in view of their Conservation Objectives. The European sites have been determined to most likely to be subject to Likely Significant Effects (LSEs) in the absence of avoidance of effect and/or mitigation. The European sites were rescreened in line with the 'source-pathway-receptor' model following refinement of the draft GWS at its current stage.

The AA screening considered the following pathways of effect:

- Habitat loss – temporary
- Habitat loss – permanent
- 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 Alien Species
- Disturbance of species
- Mortality

Based on the information currently available, it was concluded that the potential for LSEs on European Sites, in relation to their COs, cannot be excluded either alone or in-combination. The Plan as it evolves will aim to avoid effects or to mitigate where avoidance is not possible. However, in the absence of mitigation (as required at Stage 1 assessment), and in accordance with the precautionary principle (European Commission, 2000), eleven European Sites that are hydrologically connected and/or functionally linked to the draft GWS Study Area are 'screened in' for further assessment.

In accordance with Article 6(3) of the Habitats Directive, AA Screening found that Stage 2 AA of the draft GWS was required. This is presented in an accompanying Natura Impact Statement (NIS) to fully inform the AA determination to be undertaken by UÉ, as the competent authority in this case. Eleven European Sites were brought forward to AA and an NIS prepared to fully inform the AA of the draft GWS. The following European Sites were screened in for further assessment:

- Connemara Bog Complex SAC
- Connemara Bog Complex SPA
- Cregganna Marsh SPA
- Galway Bay Complex SAC
- Inner Galway Bay SPA
- Lough Corrib SAC
- Lough Corrib SPA
- Lough Mask SPA
- Maumturk Mountains SAC
- Rahasane Turlough SPA
- Ross Lake and Woods SAC

Figure 5-11 shows European Sites in the vicinity of the draft GWS Study Area.

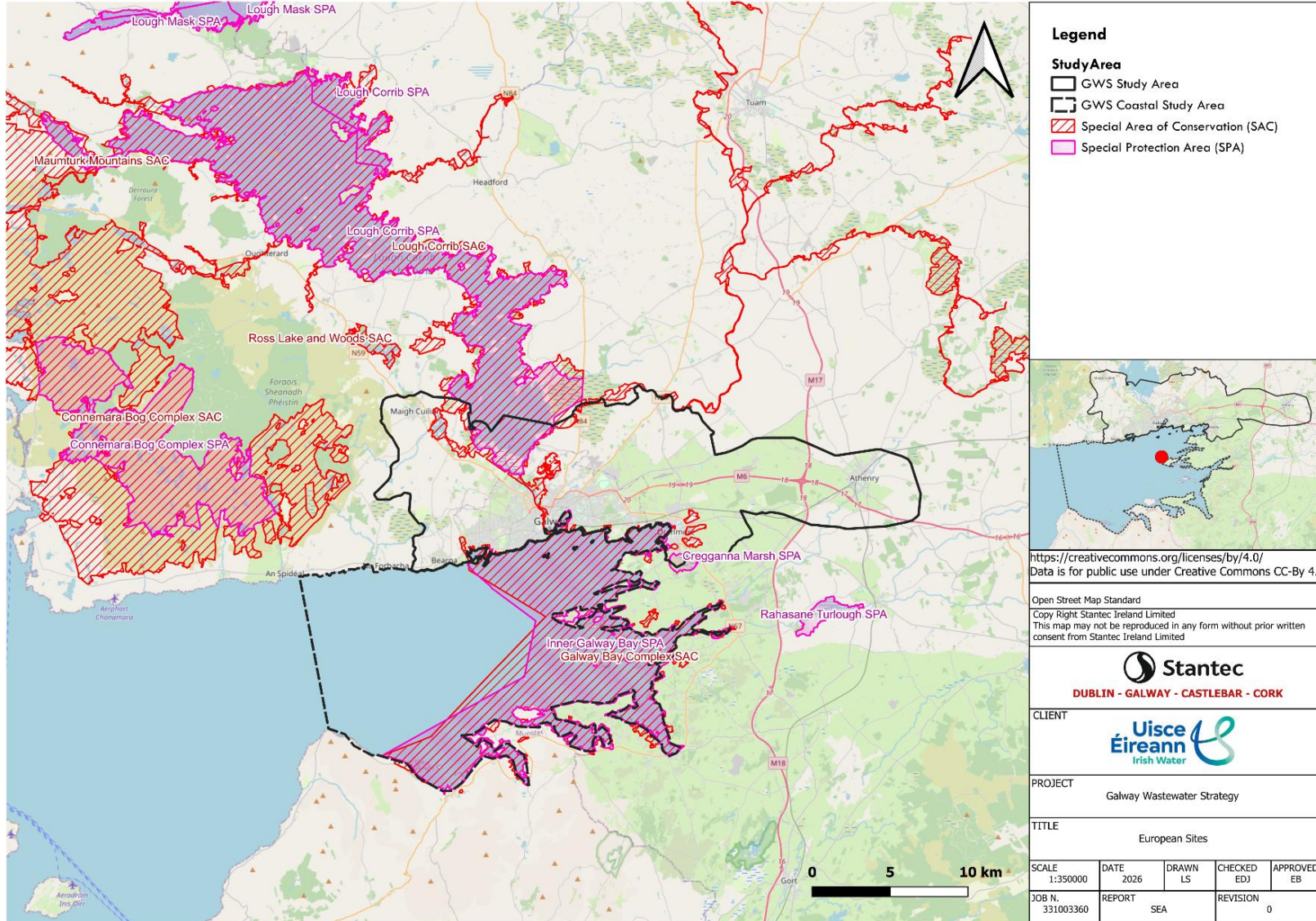


Figure 5-11: European Sites (SACs and SPAs in the vicinity of the draft GWS Study Area)

5.11.1.2. Annex I Habitats

Under Article 17 of the EU Habitats Directive (92/43/EEC), Ireland has an obligation to monitor and assess the conservation status of Annex listed habitats (e.g. coastal habitats such as dunes, freshwater habitats such as turloughs, natural grasslands, raised bogs and fens, and forests). There are a large range of designated habitats within the study area, which are shown in **Figure 5-12**.

5.11.1.3. Protected species - Wildlife Act

The Wildlife Act 1976 (S.I. No. 39 of 1976) (as amended) is the principal national legislation providing for the protection of wildlife and the control of some activities that may adversely affect wildlife. The Act protects many species found within the GWS Study Area, including badger, bat, hedgehog, otter, seal, freshwater crayfish, and freshwater pearl mussel. The list of flora species listed under the act are set out in the Flora (Protection) Order 2022 (S.I. No. 235 of 2022).

5.11.1.4. Protected areas - Others

Designated sites (aside from European Sites) in the vicinity of the study area are listed in **Table 5-12** and shown in **Figure 5-13**. There are no National Parks, Nature Reserves, or ancient woodlands within the draft GWS Study Area.

Table 5-12 Intersecting designated sites for biodiversity

Designation Type	List of intersecting Sites in the vicinity of the Study Area	Qualifying Features / Interests
Ramsar	<ul style="list-style-type: none"> Lough Corrib Inner Galway Bay 	Ramsar Sites are wetlands that are considered to be of international importance under the Ramsar Convention on Wetlands, a global treaty created to protect wetlands and promote their sustainable use (Figure 5-14). The European Union (EU) issued a Communication on the Wise Use of Wetlands in 1995 ⁶⁴ , which outlines the importance of wetlands and their functions for human welfare, notes the increasing loss of wetlands at both a global and EU level and states its commitment to wise use of wetlands in the context of sustainable development and in accordance with the Ramsar Convention.

⁶⁴ European Commission, 1995. Available at: [Report on the Commission Communication to the Council and the European Parliament on the wise use and conservation of wetlands - Committee on the Environment, Public Health and Consumer Protection | A4-0238/1996 | European Parliament](#). Accessed February 2026.

Designation Type	List of intersecting Sites in the vicinity of the Study Area	Qualifying Features / Interests
Natural Heritage Areas (NHAs)	<p>Existing NHAs</p> <ul style="list-style-type: none"> • Moycullen Bogs NHA • Cregganna Marsh NHA <p>Proposed NHAs</p> <ul style="list-style-type: none"> • Galway Bay Complex • Lough Corrib • Ballycuirke Lough • Ross Lake And Woods • Drimcong Wood • Kitullagh Turlough 	<p>NHAs are designated important wildlife areas, legally protected at national level under the Wildlife (Amendment) Act 2000 (S.I. No. 38 of 2000). NHAs are considered important for the habitats present or for species of plants and animals whose habitat needs protection.</p> <p>Proposed NHAs (pNHAs) were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats. These sites have limited protection under:</p> <ul style="list-style-type: none"> • Agri-environmental farm planning schemes such as Rural Environment Protection Scheme (REPS 3 and 4) and continue to support the objective of maintaining and enhancing the conservation status of pNHAs. The farm plans operate for a period of 5 years. REPS 4 plans will continue to operate until 2014. • Forest Service requirement for NPWS approval before they will pay afforestation grants on pNHA lands • Recognition of the ecological value of pNHAs by Planning and Licencing Authorities.
Shellfish waters	<p>Downstream of the Clarinbridge_030 river waterbody— into which the Athenry WwTP discharges—the Clarinbridge_050 river waterbody flows into the Dunbulcaun Bay transitional waterbody. Dunbulcaun Bay forms part of the Clarinbridge / Kinvara Bay shellfish area.</p>	<p>Shellfish waters are designated areas to protect the aquatic habitats of bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams. Ireland’s Shellfish waters are protected under the European Communities (Quality of Shellfish Waters) Regulations 2006 (S.I. No. 268 of 2006) (as amended).</p>

Designation Type	List of intersecting Sites in the vicinity of the Study Area	Qualifying Features / Interests
Salmonid River Regs (S.I. 293/1988)	River Corrib (Corrib_010 and Corrib_020) is a Salmonid River	Designated Salmonid Waters under S.I. No. 293/1988 European Communities (Quality of Salmonid Waters) Regulations 1988.
<i>Margaritifera</i> Sensitive area	Knock <i>Margaritifera</i> sensitive area ⁶⁵	<i>Margaritifera</i> Sensitive Areas contain records of the Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>), a critically endangered species both listed in Annex II and Annex V of the EU Habitats Directive (92/43/EEC).

⁶⁵ National Parks and Wildlife Services (NPWS). 2020. *Margaritifera* sensitive areas map. Available at: [Habitat and Species data | National Parks & Wildlife Service](#). Accessed: March 2026.

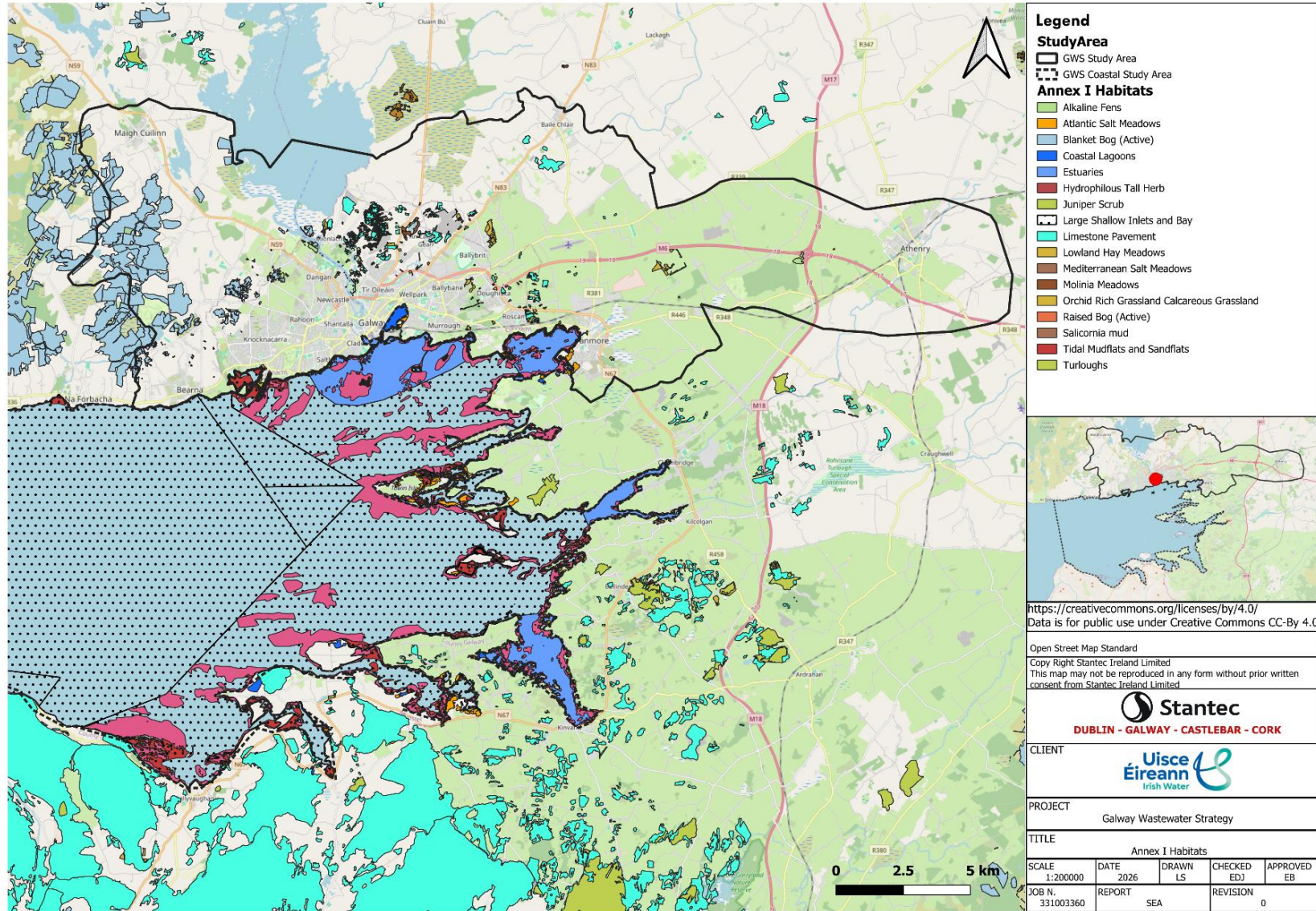


Figure 5-12: Annex I Habitats in the vicinity of the draft GWS Study Area

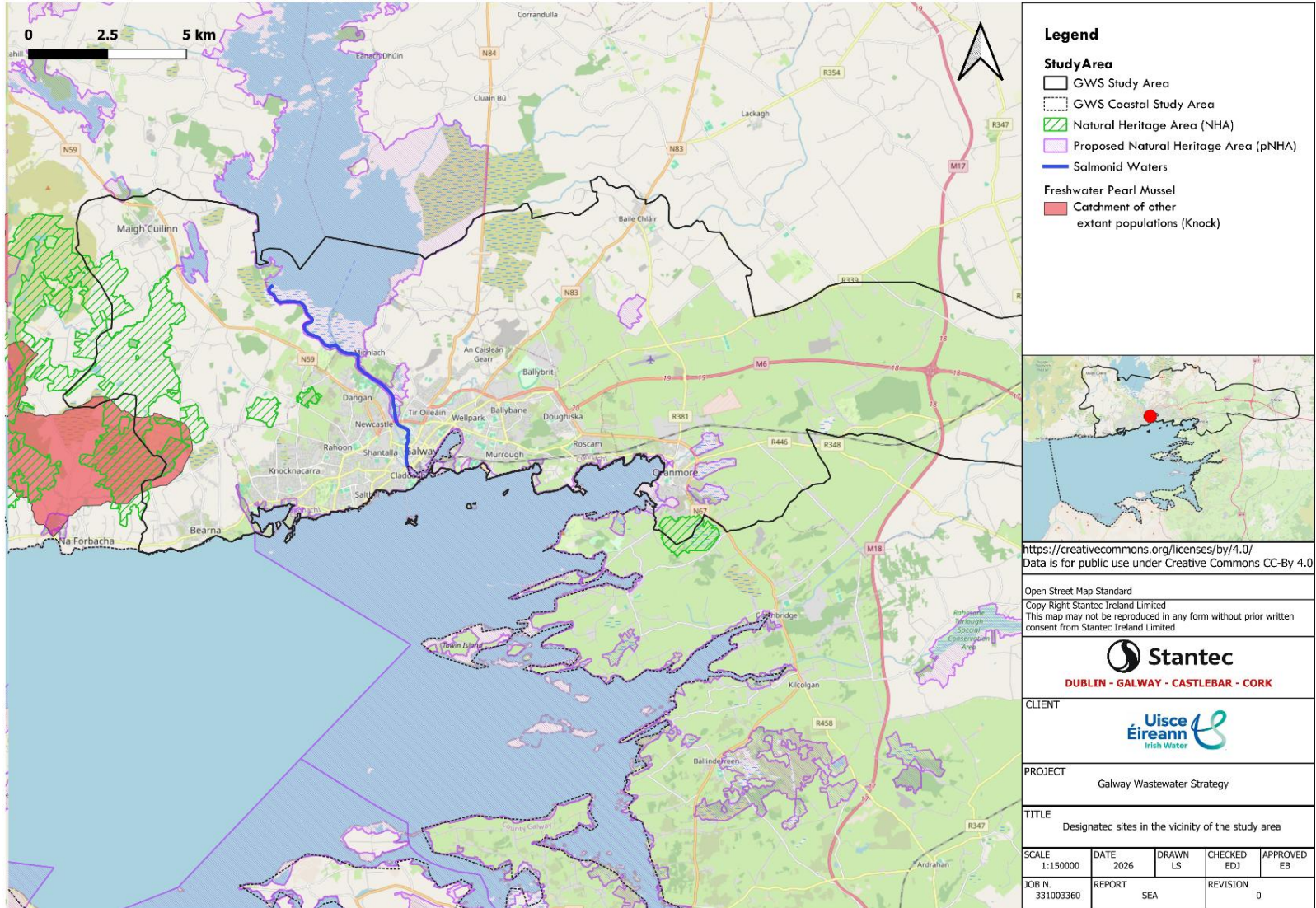


Figure 5-13 Designated Sites (Other than European Sites) in the vicinity of the draft GWS Study Area

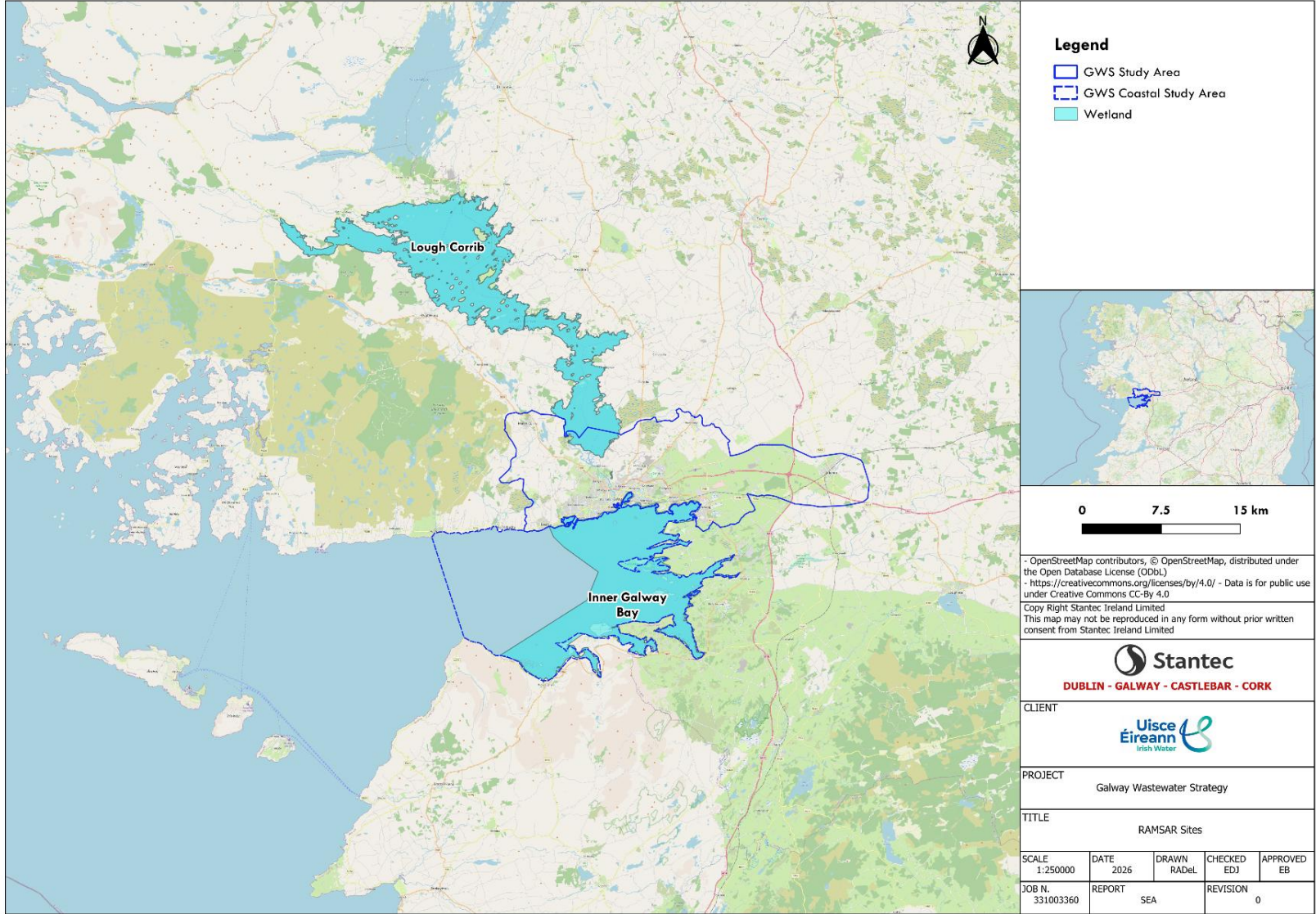


Figure 5-14: RAMSAR Wetlands within the draft GWS Study Area

5.11.1.5. Aquatic Habitats

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

According to the SEA for Galway City Development Plan 2023 - 2029⁶⁶, Atlantic Salmon use River Corrib and Lough Corrib as spawning grounds. White-clawed Crayfish live throughout Lough Corrib. Other species that are listed under Annex II of the E.U. Habitats Directive include sea lamprey and brook lamprey. Salmonid Waters are protected under the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988). Atlantic salmon are also protected through Natura 2000 European sites that protect salmonids and their habitats under the EU Habitats Directive. Within the draft GWS Study Area, the River Corrib (Corrib_010 and Corrib_020) are designated salmonid waters.

Atlantic salmon, lamprey species, European eel, and brown trout, as well as many marine fish species use the draft GWS Study Area at various stages of their lifecycles. Atlantic salmon and lamprey species are protected under the EU habitats Directive. The European Eel is endangered at present, and additional protection measures have been introduced in that regard - it is incumbent on Ireland to ensure that the eel and its range and habitat are properly protected.

The Terryland River within Galway City is an important water corridor fringed by wetlands and the Terryland Forest Park. Turloughs are present to the north of Galway city, and a large lake is also present in the limestone area of Illaunacorra. Extensive peatland areas occur in the west of the study area and are deemed internationally rare in its presence as mosaics in the townlands of Cappagh and Ballagh. A rare plant, the slender bog cotton, is present in the particularly wet, quaking bogs and peaty lake edges and is found within the study area. Habitats recorded at Ardaun include dry calcareous and natural grassland and exposed calcareous rock.

5.11.1.6. Coastal and Marine Environment

The coastal zone of the study area contains a wide range of coastal habitats, including priority habitats (*) – critically endangered ecosystems requiring strict protection within European sites. The majority of the coastal area of the study area is within the Galway Bay Complex SAC which is designated for aquatic habitats and water-dependent species. The QIs within the SAC include:

- Mudflats and sandflats not covered by seawater at low tide
- Coastal lagoons*
- Large shallow inlets and bays
- Reefs
- Perennial vegetation of stony banks
- *Salicornia* and other annuals colonising mud and sand

⁶⁶ Galway City Development Plan 2023 – 2029 SEA Environmental Assessment. Available at: [Draft SEA Environmental Report](#). Accessed: July 2024

- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
- Otter (*Lutra lutra*)
- Harbour seal (*Phoca vitulina*)
- Mediterranean salt meadows (*Juncetalia maritimi*)
- Turloughs*
- *Juniperus communis* formations on heaths or calcareous grasslands
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (*important orchid sites)
- Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae*
- Alkaline fens

5.11.1.7. Avifauna

Inner Galway Bay SPA and Lough Corrib SPA are located partially within the draft GWS study area and are nationally important ornithological sites. Inner Galway Bay SPA is designated for a large number of avifauna, including Annex I listed Black-throated diver (*Gavia arctica*) and Great northern diver (*Gavia Immer*). Lough Corrib SPA also contains Annex I avifauna, including Hen harrier (*Circus cyaneus*) and Arctic tern (*Sterna paradisaea*). Lough Corrib, the largest lake in the Republic of Ireland, can be divided into two parts: a relatively shallow basin in the south, which is underlain by carboniferous limestone, and a larger, deeper basin to the north, which is underlain by more acidic granite, schists, shales and sandstones. The shallow, lime-rich waters of the southern basin of the lake support one of the most extensive beds of Stoneworts (Charophytes) in Ireland, which are a very important source of food for waterfowl.

5.11.1.8. Urban Woodland

According to the SEA for Galway City Development Plan 2023 - 2029⁶⁷, Galway City contains several urban woodlands that support local biodiversity, provide wildlife refuge, and contribute to the wider ecological network. Terryland Forest Park supports 12 recorded mammal species, including seven bat species and the Irish hare—typically a rural species—highlighting the connectivity of natural areas within the city. Bearn Woods (c. 21ha) is of high ecological value, linking to internationally important habitats such as the Galway Bay Complex SAC. It also has rich archaeological heritage and includes oak-ash-hazel woodland, mixed alder oak-ash woodland, and dry calcareous and neutral grassland. Merlin Park Woods contains diverse habitats, including native and mixed woodland, conifer woodland, limestone pavement, wet grassland, scrub, and a stream. It supports several bird and bat species, red squirrels, and breeding long-eared owls (*Asio otus*) within its conifer woodland.

5.11.1.9. Wetland

Wetlands improve water quality, store floodwater and reduce the impact of floods and storms downstream, provide habitat for wildlife, support biodiversity, and offer important recreational and cultural heritage benefits. The role of wetlands is recognised as forming a vital element in

⁶⁷ Galway City Development Plan 2023 – 2029 SEA Environmental Assessment. Available at: [Draft SEA Environmental Report](#). Accessed: July 2024

addressing climate change effects by acting as carbon storage. **Figure 5-14** shows the RAMSAR wetlands within the GWS study area.

5.11.1.10. Invasive Alien Species

Invasive Alien Species (IAS) are defined as those species that have spread beyond their native range, have successfully spread and established, and can cause serious environmental, economic, and human health impacts⁶⁸. IAS are a growing global threat, causing significant ecological, economic, cultural, and societal harm, including serious negative impacts on biodiversity, ecosystem functions, human health, and well-being across all regions of the world⁶⁹, and numerous IAS have become successfully established over large areas of Europe⁷¹. Trend analysis shows that 13% of the IAS recorded and assessed in Ireland are high-impact species. Of the 377 species assessed, 21% occur in freshwater environments, which are experiencing the fastest rate of IAS increase⁷². Ireland's Fourth National Biodiversity Action Plan recognises the threats posed by IAS, and outlines objectives to prevent, detect, and manage IAS in alignment with international obligations⁷³.

The main regulations influencing Ireland's Invasive Alien Species lists are:

- The European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024)
- The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended)
- Regulation (EU) on the prevention and management of the introduction and spread of invasive alien species (No. 1143 of 2014) (as amended)

The European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) contains specific provisions that govern the control of IAS listed on its First Schedule.

The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended) contains specific provisions that govern control of IAS listed on its Third Schedule (known as Third Schedule species). Regulation 49 prohibits introducing, breeding, releasing or dispersing of certain species. Regulation 50 prohibits dealing in and keeping certain species but has not yet been enacted. According to National Biodiversity Data Centre⁷⁴, the Third Schedule (S.I. No. 477 of 2011) (as amended) IAS present in the study area are summarised in **Table 5-13**.

⁶⁸ Keller, R., Geist, J., Jeschke, J.M., & Kühn, I. 2011. Invasive Species in Europe: Ecology, Status, and Policy. Environmental Sciences Europe. Available at: [Invasive Species in Europe](#). Accessed: March 2026.

⁶⁹ Cruz, J.G., & Johnson, M.F. 2022. Invasive Species in Post-2020 Global Environmental Politics. Global Environmental Politics. Available at: [Invasive Species in Post-2020](#). Accessed: March 2026.

⁷⁰ Schwindt, E., August, T.A., Vanderhoeven, S., McGeoch, M.A., Bacher, S., Galil, B.S., Genovesi, P., Hulme, P.E., Ikeda, T., Lenzner, B., Nuñez, M.A., Ordonez, A., Pauchard, A., Rahlo, S.J., Renard Truong, T., Roy, H.E., Sankaran, K.V., Seebens, H., Sheppard, A.W., Stoett, P., Vandvik, V., Wilson, J.R.U., & Meyerson, L.A. 2024. Overwhelming evidence galvanizes a global consensus on the need for action against Invasive Alien Species. Biological Invasions. Available at: [Overwhelming Evidence Galvanizes a Global Consensus on the Need for Action Against Invasive Alien Species](#). Accessed: March 2026.

⁷¹ Hulme, P.E., Roy, D.B., Cunha, T. & Larsson, T. B. 2009. A pan-European inventory of alien species: rationale, implementation and implications for managing biological invasions. Handbook of Alien Species in Europe (ed DAISIE). Available at: [Pan-European Inventory of Alien Species](#). Accessed: March 2026.

⁷² O'Flynn, C., Kelly, J. & Lysaght, L. 2014. Ireland's invasive and non-native species – trends in introductions. National Biodiversity Data Centre Series No. 2. Ireland. Available at: [Trends Report 2013](#). Accessed: March 2026.

⁷³ Department of Housing, Local Government and Heritage. 2023. Ireland's 4th National Biodiversity Action Plan. Available at: [Ireland's 4th National Biodiversity Action Plan \(NBAP\) 2023 - 2030](#). Accessed: December 2025.

⁷⁴ National Biodiversity Data Centre (NBDC). 2026. Biodiversity Maps – Mapping Ireland's Wildlife. Available at: [Home - Biodiversity Maps](#). Accessed: July 2024

Table 5-13 Third Schedule Invasive alien species present in the study area

<ul style="list-style-type: none"> • American Mink (<i>Mustela vison</i>) • American Skunk-cabbage (<i>Lysichiton americanus</i>) • Brazilian Giant-rhubarb (<i>Gunnera manicata</i>) • Brown Rat (<i>Rattus norvegicus</i>) • Canada Goose (<i>Branta canadensis</i>) • Canadian Waterweed (<i>Elodea canadensis</i>) • <i>Fallopia japonica x sachalinensis</i> = <i>F. x bohemica</i> • Fallow Deer (<i>Dama dama</i>) • Giant Hogweed (<i>Heracleum mantegazzianum</i>) 	<ul style="list-style-type: none"> • Greylag Goose (<i>Anser anser</i>) • Himalayan Knotweed (<i>Persicaria wallichii</i>) • Himalayan Balsam (<i>Impatiens glandulifera</i>) • Japanese Knotweed (<i>Fallopia japonica</i>) • Roach (<i>Rutilus rutilus</i>) • Ruddy Duck (<i>Oxyura jamaicensis</i>) • Spanish Bluebell (<i>Hyacinthoides hispanica</i>) • Three-cornered Garlic/Leek (<i>Allium triquetrum</i>) • Water Fern (<i>Azolla filiculoides</i>) • Wireweed (<i>Sargassum muticum</i>) • Zebra Mussel (<i>Dreissena (Driessen) polymorpha</i>)
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Regulation (EU) on the prevention and management of the introduction and spread of invasive alien species (No. 1143 of 2014) (as amended) came into force on 1st January 2015. This Regulation, grounded in the Convention on Biological Diversity's principles of prevention, prioritisation, and coordination, aims to comprehensively address IAS by protecting biodiversity and ecosystem services while minimising related health and economic impacts. Under Article 13(1) of Regulation (EU) No. 1143 of 2014 (as amended) Member States must analyse pathways of unintentional introduction and spread of IAS of Union concern, identify and prioritise those posing the greatest risk, and develop Pathway Action Plans (PAPs) for priority pathways. This supports the objectives of the Convention on Biological Diversity (Aichi Target 9⁷⁵) and the EU Biodiversity Strategy for 2030 to identify, prioritise, control, and prevent IAS and their pathways.

5.11.1.11. EU Biodiversity Strategy for 2030

The EU Biodiversity Strategy for 2030 aims to put Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments. It is the basis for the EU's position in international negotiations and its participation in the Convention on Global Biodiversity. It is also a key component of the European Green Deal, which aims to cut emissions by at least 50% by 2030, rising towards 55%, while legally binding the 2050 neutrality goal through the European Climate Law. The EU Biodiversity Strategy for 2030's key actions include expanding protected areas (European Sites/Natura 2000 Sites) on land and at sea with strict protection for high-value sites, implementing the first Nature Restoration Regulation with binding habitat and species

⁷⁵ Convention on Biological Diversity. The Convention on Biological Diversity. Available from: [Convention on Biological Diversity](#). Accessed: December 2023.

targets, promoting transformative change through better knowledge, funding, and decision-making, and addressing global biodiversity challenges.

5.11.2. Future Trends

Future trends in biodiversity will depend on the development and implementation of necessary conservation measures. Operational Programmes accessing EU funding instruments will need to be used to meet the strategic national and EU objectives for biodiversity, including the protection of European sites. Future trends will be influenced by changes/additions to existing designated sites (SACs, SPAs, and NHAs). A number of proposed Natural Heritage Areas (pNHAs) may be reviewed and upgraded to NHAs. Challenges to biodiversity are likely to be further exacerbated by the effects of climate change. Climate change can affect habitats and species both inside and outside protected sites, increasing their vulnerability to additional pressures such as land loss, disturbance, severance, and fragmentation. Invasive alien species (IAS) which are listed as potential threats may become established threats in the future. The continuing development of the National Biodiversity Data Centre National Database, which documents IAS, will assist with our knowledge of their spread. These datasets and associated reports will support the implementation of recent European legislation aimed at halting the spread of invasive alien species.

The Water Action Plan 2024, Ireland's third River Basin Management Plan, includes proposals for a range of measures intended to support improvements to water quality and biodiversity. The plan outlines measures to address significant pressures such as agriculture, urban run-off, and urban wastewater⁷⁶.

Galway City Biodiversity Action Plan 2025-2030 builds on the achievements of previous plans and reflects the urgency of the global biodiversity and climate crises, while also embracing the opportunities that come from working together across communities, sectors, and generations. It sets out actions to promote and conserve the city's natural heritage⁷⁷.

The protection of Ireland's habitats and species is at a critical point and remedial action across the country is needed. Implementing national biodiversity policies, such as Ireland's 4th National Biodiversity Action Plan (NBAP), requires an increased level of collaboration and coordination across multiple sectors and the whole of society. In turn, this can give rise to indirect co-benefits for other sectors and environmental issues such as climate change and water quality. Objective 3C1 of the NBAP states that "All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure". UÉ's revised Biodiversity Action Plan now requires Biodiversity Net Gain on all infrastructure projects. Biodiversity Net Gain is therefore an objective of the draft GWS.

The NBAP sets the national biodiversity agenda for the period 2023-2030⁷⁸, which includes five key objectives:

⁷⁶ Department of Housing, Local Government and Heritage (DHLGH), 2024. Water Action Plan 2024. Available at: [water-action-plan-2024.pdf](#). Accessed January 2026

⁷⁷ Galway City Council, 2025. Galway City Biodiversity Action Plan Available at: [Galway City Council Biodiversity Action Plan 2025-2030.pdf](#). Accessed January 2026.

⁷⁸ Department of Housing, Local Government and Heritage (DHLGH), 2023. Ireland's 4th National Biodiversity Action Plan. Available at: [Ireland's 4th National Biodiversity Action Plan \(NBAP\) 2023 - 2030](#). Accessed January 2026.

- Adopt a whole-of- government, whole- of-society approach to biodiversity
- Meet urgent conservation and restoration needs
- Secure nature’s contribution to people
- Enhance the Evidence base for action on biodiversity
- Strengthen Ireland’s contribution to international biodiversity initiatives

5.11.3. Key Considerations for the Draft GWS and SEA

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

Challenges

- The potential for reduced water quality from wastewater discharges which negatively impact on water-dependent habitats and species related wastewater discharges
- Instream barriers impacting surface water connectivity and instream species movement.
- The potential for spread of invasive alien species during construction or operational activities.
- The potential for construction impacts (e.g. disturbance) on terrestrial and aquatic habitats.

Opportunities

- Improved wastewater treatment and reduced pollution loads from wastewater discharge
- Avoid contributing to the spread of invasive alien species during construction or operational activities. Invasive Species Management Plans will be implemented where necessary.
- Include biodiversity enhancement measures in schemes. UÉ’s revised Biodiversity Action Plan now requires Biodiversity Net Gain on all infrastructure projects. Biodiversity Net Gain is therefore an objective of the draft GWS.
- Use of nature-based solutions and catchment management approaches (within the remit of UÉ) which will provide mutual benefits to both ecosystems and human service.
- Use of targets and measures that can tackle Ireland’s climate crisis and our biodiversity emergency as part of an integrated approach to tackling environmental problems.

5.12 Material Assets Baseline Condition

SEA legislation includes “material assets” as a topic to be addressed in the SEA. However, it does not clearly define what this topic includes. For the purpose of this SEA Environmental Report, Material Assets are considered to be the natural and built assets (non-cultural assets) and resources that support society’s ability to live and work, and that have intrinsic and economic value. Material assets considered here include:

- Land use (Natural Assets) are resources which include agricultural land, peatlands and forestry (see also **Section 5.15** - Geology and Soils).
- Built assets, including infrastructure relating to public open spaces and buildings, schools, healthcare facilities, residential and social buildings such as housing, and infrastructural networks such as electricity, gas, transport with emphasis on water supply and wastewater infrastructure and management as most relevant.
- Waste management - an aspect of resource management and an important part of the circular economy.

These assets all need to be considered in new water services, resource planning and infrastructure development.

5.12.1. Land Use (Natural Assets)

The land uses of the study area comprise pastures, urban fabric, industrial/commercial areas, sport and leisure facilities, marsh, mixed forest peat bogs, waterbodies, etc (see **Figure 5-15**).

5.12.2. Settlements

The key settlements within the draft GWS study area listed in **Table 5-5** (see Section 5.9.1) and shown in Figure 5-15. Galway City and Suburbs is the largest settlement both in population and spatial extent, followed by Oranmore, Athenry, Bearna, Moycullen, and Claregalway.

5.12.3. National infrastructure

The draft GWS study area has numerous major national roads, motorways and secondary roads. At present traffic levels during peak hours within Galway City and its Metropolitan Area far exceed the capacity of the existing transport network, resulting in severe traffic congestion at peak times, especially along the east-west axis of the city, adversely impacting on the existing businesses within the city region, as well as businesses in Connemara. Galway has a direct intercity rail link to Dublin with up to 10 services departing daily. There are indirect rail services from Galway to all other major train hubs in Ireland⁷⁹. Galway Airport has been closed to Commercial Traffic for over ten years⁸⁰. The nearest airports to Galway are Shannon Airport and Knock Airport. The study area consists of the Port of Galway, which is located in the sheltered, Eastern corner of Galway Bay and is the most central port on the West Coast of Ireland. In 2022, the Port handled 350 vessels totalling 500,259 tonnes of cargo - of this, imports were 287,990 tonnes and exports 212,269 tonnes⁸¹. Although Galway city's topography is conducive to cycling, the infrastructure for cycling is currently limited and discontinuous, with the volume of the city's vehicular traffic decreasing the appeal and safety for cycling. Transport issues in Galway City include peak hour congestion and journey time unreliability, over reliance on private cars, lack of alternative transport modes, and lack of road space for the development of Smarter Mobility and Public Transport. The N6 Galway City Ring Road (GCRR) is a key component of the Galway Transport Strategy which realises Galway City and County Council's vision of all elements of transport working together to achieve an integrated

⁷⁹ Galway Tourism.ie. Available at: [Trains to Galway](https://www.galwaytourism.ie/trains-to-galway) | [Train times and train routes to Galway Ireland](https://www.galwaytourism.ie/train-times-and-train-routes-to-galway-ireland). Accessed July 2024

⁸⁰ Galway Airport. Available at: [galwayairport.com](https://www.galwayairport.com). Accessed: July 2024

⁸¹ Port of Galway. General Information. Available at: [Port of Galway General Information \(theportofgalway.ie\)](https://www.portofgalway.ie). Accessed: July 2024

sustainable transport solution⁸². On 7 April 2026, An Coimisiún Pleanála approved (with conditions and modifications) the N6 Galway City Ring Road.

⁸² Galway County Council. N6 Galway City Transport Project. Available at: [N6 Galway City - Transport Infrastructure](#). Accessed March 2026.

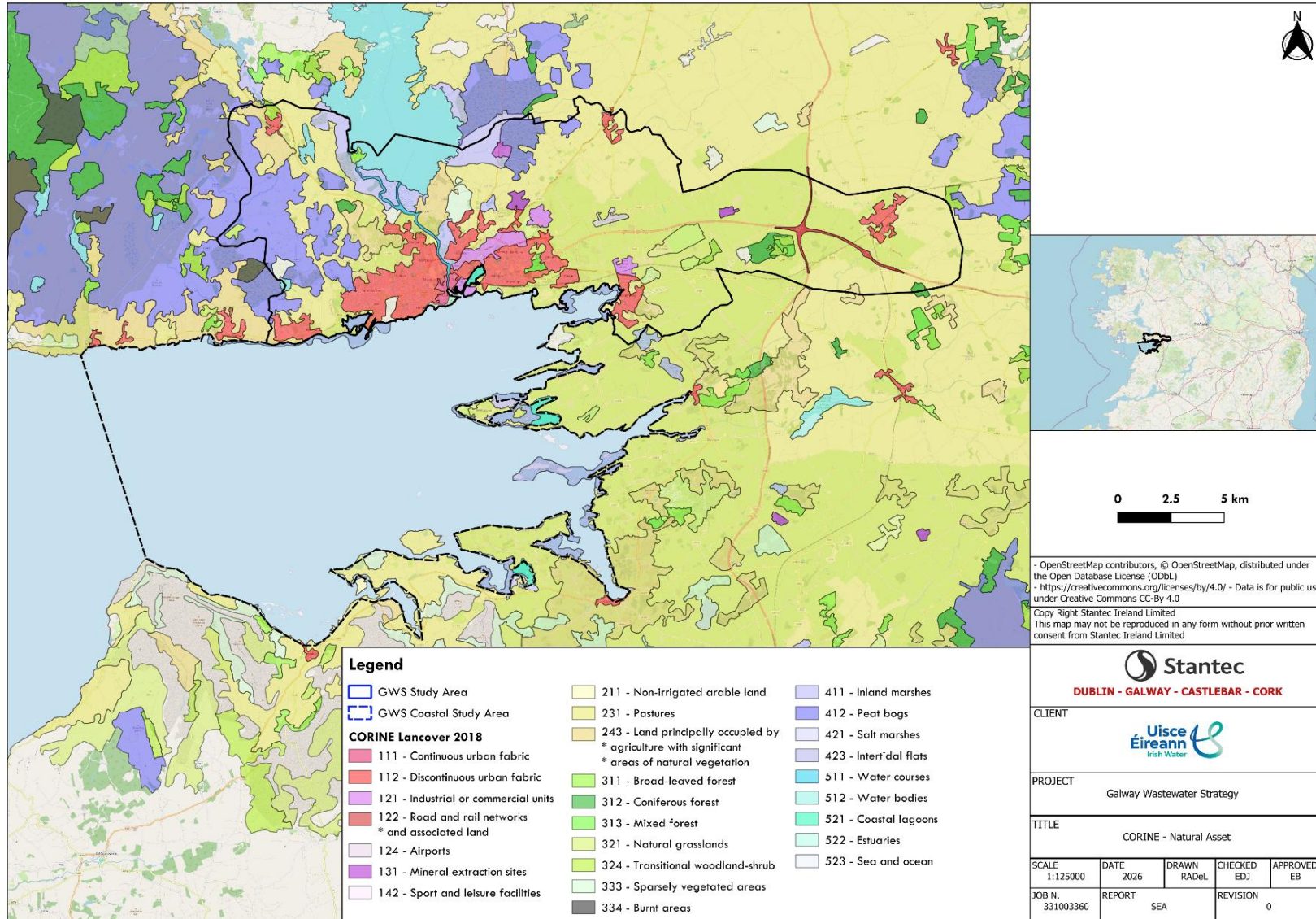


Figure 5-15: CORINE Land Cover Types in the draft GWS Study Area

5.12.4. Wastewater infrastructure

The recast Urban Wastewater Treatment Directive (EU) 2024/3019 is designed to better protect the environment and public health, support the EU's climate goals and circular economy, and modernise urban wastewater management. These include wastewater collection and treatment required for all urban areas $\geq 1,000$ population equivalents (PE), secondary treatment (removal of biodegradable organic matter) must be applied in all agglomerations $\geq 1,000$ PE, and tertiary treatment (nutrient removal e.g., nitrogen and phosphorus) becomes mandatory for larger plants (e.g., $\geq 150,000$ PE) by 2039.

Within the draft GWS Study Area, there are 50 wastewater pumping stations (WWPS) and 29 stormwater overflows (SWOs) - 26 of which are located in Galway City, 2 in Athenry and 1 in Moycullen. Historically Uisce Éireann has had limited information regarding discharges of untreated wastewater through SWO outlets, and to rectify this, Uisce Éireann is in the process of assessing its SWO outlets against national standards. Uisce Éireann are also installing monitoring equipment to measure how often and for how long wastewater is discharged through storm water overflow outlets⁸³.

There are four wastewater treatment plants in the draft GWS study area, and their type and status are summarised in **Table 5-14** below.

Table 5-14: Wastewater Treatment Plants and their population equivalents (PE) within the Study Area

Wastewater Treatment Works	Treatment Type	Design PE	Current PE
Mutton Island (Galway City)	Secondary Treatment	170,000	143,800
Moycullen	Tertiary Phosphorous Removal	4,000	2,700
Athenry	Tertiary Phosphorous Removal	9,500	6,500
Claregalway	Tertiary Phosphorous Removal	6,000	2,700

Galway City/Mutton Island: Galway City/Mutton Island is Ireland's third largest wastewater agglomeration and encompasses Galway City and outlying areas within Galway County. Mutton Island WwTP is located approximately 900m off the coast of Galway City. Galway City/Mutton Island is a high-risk catchment regarding network performance, with aesthetic issues, risks associated with nearby bathing waters, regulatory concerns related to dry weather discharges, and a risk of non-adherence with the future non-binding objective outlined in Annex V of the

rUWWTD, to progressively and significantly reduce pollution from stormwater overflows and urban runoff.

Moycullen: Moycullen village is located approximately 10km northwest of Galway city. Moycullen WwTP is located to the east of Moycullen village, and the folio is subdivided into two parcels of land. The WwTP discharges treated effluent to the Ballyquirke Canal (Ballycuirke_010 river waterbody) which in turn discharges to Ballyquirke Lake. The lake drains to Lough Corrib via Ballycuirke_010 both of which form part of the Lough Corrib SAC. The current Moycullen WwTP is designed to treat 4,000 PE. Moycullen is classified as a low-risk catchment regarding network performance. Further modelling work is required but it does not affect strategy outcomes. Although sewer network modelling demonstrates that WwTP discharges require aesthetic screening, the frequency and volume of discharges for all growth scenarios can be considered negligible and therefore does not have any other associated risks.

Athenry: Athenry town is located approximately 22km east of Galway City. Athenry WwTP is located to the south-west of the town within the townland of Prospect. The WwTP discharges effluent to the adjacent Clarinbridge_030 river waterbody. The river flows south-westwards until it meets the sea at Dunbulcaun Bay which forms part of the Galway Bay Complex SAC and Inner Galway Bay SPA. Athenry is classified as a medium-risk catchment regarding network performance. As growth increases in the future, the WFD ammonia and Biochemical Oxygen Demand (BOD) standards are forecasted to be exceeded and there is a risk of potential non-adherence with the future non-binding objective outlined in Annex V of the rUWWTD to progressively and significantly reduce pollution from stormwater overflows and urban runoff.

Claregalway: Claregalway is located approximately 10 km northeast of Galway City. The WwTP discharges treated effluent to Clare (Galway)_100, which drains to Lough Corrib which forms part of the Lough Corrib SAC. The current WwTP was designed to cater for wastewater arising from a maximum design PE of 6,000. Claregalway is a fully modern separate sewerage system and therefore does not have any SWOs and any associated risks.

5.12.5. Waste Management

Ireland's waste management landscape changed radically with the implementation of the Waste Management Act in 1996 (No. 10/1996) (as amended). Since then, Ireland has significantly reduced landfill disposal, developed recycling infrastructure, and advanced expertise in waste management, regulation, and innovation, becoming the first country to introduce a plastic bag tax and to launch a National Waste Prevention Programme. However, Ireland has reached a plateau in relation to waste management; to further deliver the necessary waste prevention and circular economy ambitions will be a challenge. The latest data highlights the need for Ireland to do more to prevent waste, improve recycling, increase self-sufficiency and move towards a more integrated approach to waste management, as part of implementation of the new national waste policy, the EU Circular Economy Package and the European Green Deal.

The 2020 waste statistics⁸⁴ indicate that waste generation is increasing. Construction and demolition waste is the largest waste stream in Ireland in 2020 (over 8.2 million tonnes). Ireland

⁸⁴ Environmental Protection Agency (EPA). 2020. National Waste Statistics 2020 Summary Report for 2020. Available from: [National Waste Statistics Summary Report for 2020 | Environmental Protection Agency](#). Accessed: December 2023.

generated approximately 16.2 million tonnes of waste in 2020, corresponding to 3.25 tonnes per person, up from 12.7 million tonnes (2.77 tonnes per person) in 2012. Although, the amount of municipal waste recycled has increased by 11% since 2016, total waste generated has also increased by 11%.

Ireland missed the waste electrical and electronic equipment (WEEE) collection target in 2020 and is in danger of missing future EU waste targets for municipal and plastic packaging waste recycling. Ireland is still heavily reliant on export markets, particularly for the treatment of municipal waste, hazardous waste, packaging waste, WEEE and biowastes.

Waste facilities, City Bin Co (for waste collection and recycling) and Galway City Council Recycling Centre, are within the draft GWS study area. Carroebrowne Landfill is a former landfill site within the study area.

5.12.6. Bioeconomy Action Plan 2023-2025

The 'Bioeconomy Action Plan 2023-2025' includes 33 actions to accelerate support for the development of the bioeconomy. The plan has a high focus on bringing sustainable scientific practices, technologies and biobased innovation and solutions into use by biobased industries in Ireland⁸⁵. The plan states that it is necessary to consider developing urban and regional bioeconomy initiatives which focus on making biobased products from urban biowaste and sewage sludge (from wastewater).

5.12.7. Wastewater Treatment Sludge

Sewage sludge is a by-product of wastewater treatment. The recast Urban Wastewater Treatment Directive (EU) 2024/3019 (rUWWTD) requires that sludge management must conform to the EU waste hierarchy (prevention, reuse, recycling, recovery), meaning options that avoid waste and prioritise reuse/recycling should be pursued first. Good sludge management, such as removing sludge from a treatment plant at an appropriate rate, is an essential part of the treatment process.

The rUWWTD also requires that member States must encourage the recovery of valuable resources contained in sludge — such as phosphorus and nitrogen, which are critical for agriculture and industry. UÉ is advancing this objective through its water treatment plant residual strategy, applying a circular economy approach to sludge management. It views sludge as a sustainable and valuable resource that can supplement or replace finite raw materials, rather than as a waste product. UÉ have reached a key milestone with nearly 90% of water treatment sludge going to circular economy outlets. UÉ is currently involved in several innovative projects to enhance existing wastewater treatment plants through aerobic granular sludge addition and to develop pilot sludge treatment reed beds for use in treating and de-watering water sludge containing aluminium sulphate.

Wastewater discharge authorisation is regulated by the EPA under the Wastewater Discharge (Authorisation) Regulations S.I. No. 684 of 2007 (as amended). Under the Regulations, all wastewater discharges from agglomerations require a licence or certificate of authorisation issued

⁸⁵ Department of Agriculture, Food and the Marine (DAFM). 2026. Bioeconomy Action Plan 2023-2025. Available at: [Bioeconomy Policy](#). Accessed: March 2026.

by the EPA. Licences specify pollutant limits such as biological oxygen demand (BOD), chemical oxygen demand (COD), nutrients, and microbiological contaminants. They also outline monitoring, reporting, and operational conditions to ensure ongoing compliance. The EPA monitors these discharges and enforces compliance, taking action when necessary.

5.12.8. Future Trends

5.12.8.1. Natural assets/land use

Whilst agriculture is the dominant land cover type across Ireland and within the draft GWS study area, at national level there has been an overall downwards trend in this land usage since the 1990s, with a shift from agricultural land cover to forestry and artificial areas. On a national level, artificial areas have increased by 65% since the 1990s. There is no publicly available data for the study area specifically, however it is anticipated that the overall trend of a decrease in agricultural land cover and increase in artificial land cover seen nationally is likely also reflected within the study area.

5.12.8.2. Built material assets

Significant population growth is forecast within the draft GWS study area over the coming years. This will require provision of new infrastructure to service the increased population and facilitate economic growth. However, rural and coastal areas also make a strong contribution to the GMA economy and sense of character, so efforts to maintain rural communities are necessary to benefit the wider regions.

5.12.8.3. Waste and the Circular Economy

The Circular Economy and Miscellaneous Provisions Act 2022 (No. 26 of 2022) (as amended) establishes a legislative framework for Ireland's transition from a "take-make-waste" model toward a sustainable circular economy that prioritizes reuse, recycling, and resource efficiency. This model aims to retain the value of resources in the economy for as long as possible and that will significantly reduce the nation's greenhouse gas (GHG) emissions. Ireland's National Waste Policy 2020-2025, called 'A Waste Action Plan for a Circular Economy'⁸⁶ sets out a roadmap that aims to ensure that Ireland not only meets the legal targets but also takes full advantage of the opportunities of the circular economy. Circular economy principles are the core ideas behind an economic system designed to reduce waste and keep resources in use for as long as possible. With a circularity material use rate of 2% in 2020, Ireland has significant scope for progress⁸⁷. No data on circularity material use rates relevant to the study area specifically has been identified, however it is not anticipated to differ significantly from the national trend.

The transition to a circular economy will affect all sectors and requires strong stakeholder collaboration. In wastewater treatment, this shift will drive changes focused on resource recovery, efficiency and sustainability, which may include:

⁸⁶ Department of Climate, Energy, and the Environment. 2025. A Waste Action Plan for a Circular Economy. Available at: [Waste Action Plan for Circular Economy](#). Accessed: March 2026.

⁸⁷ Organisation for Economic Cooperation and Development (OECD). 2022. OECD Economic Surveys: Ireland 2022. Available at: [OECD Economic Surveys: Ireland 2022 | OECD](#). Accessed: July 2024.

- Wastewater reuse in agriculture and industry reduces reliance on freshwater abstraction, lowers flood risk and can improve water quality.
- Nutrient recovery from sludge (e.g. fertiliser or energy production) reduces pollution and treatment demand, supporting sustainable agriculture.
- Reducing consumables and generating renewable energy improves the sustainability of wastewater services.

Key challenges to maximising circular economy opportunities—particularly wastewater reuse—include public acceptance, regulatory barriers, and market issues related to the cost of reused water⁸⁸. Relevant to these challenges are the limitations on landfill capacity, which is limited in Ireland. EU waste policy prioritizes treating waste near its source (the proximity principle). Exporting waste means opportunities to maximize material value are missed and increases transport emissions. By addressing waste infrastructure deficits, Ireland can support circular economy development and reduce transport-related emissions. Although sludge disposal is outside the draft GWS remit, wastewater treatment processes influence available disposal and reuse options.

5.12.9. Key Considerations for the Draft GWS and the SEA

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

Challenges

- Land management: Agricultural practices can contribute to the release of nutrients and fertilisers into waterbodies, causing eutrophication (Eutrophication is the enrichment of water bodies with nutrients such as phosphorus and nitrogen, causing excessive plant and algae growth that depletes oxygen and harms aquatic life). Any wastewater sludge spread on agricultural lands must be subject to nutrient management plans and authorised by Local Authorities, as per the National Bioresources Strategy, which will replace the National Wastewater Sludge Management Plan.
- Resilience of infrastructure and operations – Uisce Éireann’s wastewater infrastructure must withstand climate change impacts and accommodate future growth.
- Specifically, Athenry WwTP discharges effluent to the adjacent Clarinbridge_030 river waterbody. This river is classified as being ‘At Risk’ of not meeting WFD Objectives due to significant pressures caused by urban wastewater. It is also classified as being of ‘moderate’ status (2019-2024), with status changing to ‘poor’ just downstream (< 1 km) of the WwTP in Clarinbridge_040, which is also ‘At Risk’ due to urban wastewater. This stretch of river is within the Brockagh Lavally River and Tributaries Group water scheme Zone of contribution and the scheme’s drinking water quality must be protected.

⁸⁸ Environmental Protection Agency (EPA). 2019. Water Reuse in the Context of the Circular Economy. Available at: [Water Reuse in Circular Economy](#). Accessed: July 2024.

Opportunities

- Improved land management through reducing nutrient runoff and optimising sludge application, so that wastewater nutrients are an environmentally sound and sustainable way to enhance soil fertility. This will be addressed in the National Bioresources Strategy, which will replace the National Wastewater Sludge Management Plan. Wastewater reuse in agriculture and industry reduces reliance on freshwater abstraction, lowers flood risk, and can improve water quality. Nutrient recovery from sludge (e.g. fertiliser or energy production) reduces pollution and treatment demand, supporting sustainable agriculture.
- Enhanced infrastructure resilience – Upgrade and future-proof wastewater treatment facilities to handle climate impacts and population growth, ensuring reliable service and regulatory compliance.
- River and water quality protection – Implement targeted effluent improvements and monitoring at Athenry WwTP to safeguard the Clarinbridge_030 and Clarinbridge_040 river stretches, supporting the Brockagh Lavally drinking water scheme and achieving Water Framework Directive objectives.
- Circular economy and sustainable waste management – Reducing pollutant release and promoting resource recovery can protect water, cut carbon emissions, and lower treatment costs. Reducing consumables and generating renewable energy improves the sustainability of wastewater services.

5.13 Landscape, Townscape and Seascape

5.13.1. Landscape Baseline Condition

5.13.1.1. Landscape Character

Landscapes are shaped by multiple interacting factors, including geology, soils, topography, land cover (such as wetlands, agriculture, forestry, and urban areas), hydrology, historic and cultural development, and climate. Together, these physical and socio-economic influences create distinct landscapes. Landscape character refers to the recognisable pattern of elements that makes one landscape different from another. Landscape character is the distinct pattern of features—hedgerows, field boundaries, woodlands, riparian corridors, canals, and wetlands—that differentiates one landscape from another. These elements also act as ecological corridors, supporting habitat connectivity, but are highly vulnerable to linear infrastructure development. The European Landscape Convention is the first international treaty to focus solely on landscape. The Convention promotes the protection, management and planning of European landscapes. The Irish Government ratified the Convention in 2002. The National Landscape Strategy 2015-2025⁸⁹ was put in place to drive compliance with the European Landscape Convention by establishing principles that provide the high-level policy framework to achieve the Convention's objectives.

⁸⁹ Department of Housing, Local Government, and Heritage (DHLGH). 2021. National Landscape Strategy for Ireland. Available from: [National Landscape Strategy](#). Accessed: July 2024.

There is no National Park in the study area. The unique visual character of the study area consists of landscapes, seascapes and rich and diverse built, natural and cultural heritage. The landscape types which characterise the study area are outlined in **Table 5-15** and **Figure 5-16** below. Galway City and its suburbs comprise a predominantly urban built environment, together with areas of open space, the river and canal network, and the coastline. Other key elements of the city's landscape include important views and prospects of amenity value, mature trees, and the historic built environment. Inland waterways are a defining feature of the city, including the River Corrib, Eglinton Canal, Terryland River, and various headraces, tailraces, and minor canals. The River Corrib is bordered by inland marshes along Dyke Road, while Lough Atalia, part of Corrib Estuary transitional waterbody, is classified as a coastal lagoon. The city's heritage assets and ecologically designated sites are important components of its landscape. At the outer edges of the city, land use transitions to a mix of pasture, green urban spaces, and predominantly agricultural land. Galway City's historic cityscape and distinctive landscape setting contribute significantly to residents' quality of life and to the local economy. The city's heritage assets and ecologically designated sites are central to its landscape and cultural identity. Accordingly, the Galway City Recreation and Amenity Needs Study⁹⁰ and the Galway City Development Plan 2023-2029⁹¹ promote the sustainable use and management of natural heritage areas and recreational and amenity spaces. Galway City Council is currently preparing a Greenspace Strategy⁹² which will be used by the council to make and shape decisions such as making new playgrounds and outdoor facilities, whilst enhancing the natural and built heritage of Galway City.

Table 5-15: Landscape character types within the study area

Area	Landscape Character Type	Landscape Description
Eastern and Northeastern part of Study Area	Central Galway Complex	An extensive plain of grasslands comprising medium-to-large fields with low enclosures and many areas of low stone walls. This area contains high levels of rural housing, roads and settlements.
Northern and Northwestern part of the study area	Lake Environ	This type covers Lough Corrib - Ireland's second largest lake, which is highly prized as recreational and scenic resources.
Western part of the study area	Upland and Bog	An extensive area of very open landscapes with low levels of settlement, roads or agriculture. Upland and Bogs make up much of the centre of those western parts of the study area.

⁹⁰ Galway City Council. 2008. Galway City Recreation and Amenity Needs Study. Available at: [Galway City Recreation and Amenity Needs Study 2007](#). Accessed: July 2024.

⁹¹ Galway City Council. 2023. Galway City Development Plan 203 – 2029. Available at: [Galway City Development Plan 2023-2029](#). Accessed: January 2026.

⁹² Galway County Council (GCC). Green Spaces Strategy. Available at: [Leisure and recreation Services - Green Spaces](#). Accessed: March 2026.

Area	Landscape Character Type	Landscape Description
Coastal region of the study area	Coastal	The Coasts of Galway are highly distinctive, but very complex and varied, types of landscape that vary considerably between low and high tide
Oranmore, Bearna, Galway, Athenry	Urban	Around all major settlements, can establish extensive landscapes of urbanised appearance and character for a considerable distance around each centre.

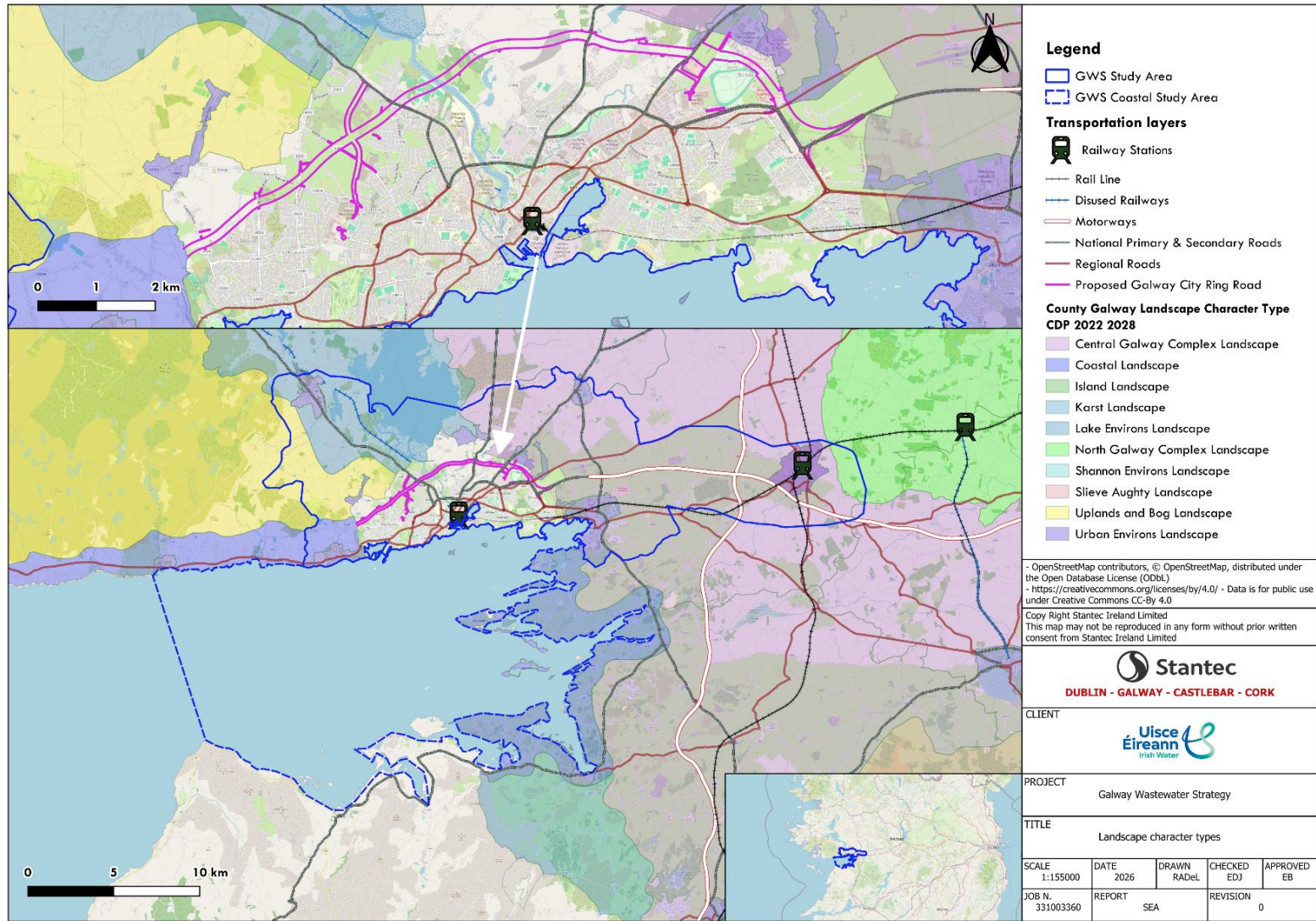


Figure 5-16: Landscape Character Types in the draft GWS Study Area (except Galway City)

5.13.1.2. Seascape

Seascape is defined as an area of sea, coastline or land, as perceived by people, whose character results from actions and interactions of land with sea by natural and/or human factors. The seascape character areas in the vicinity of the study area include Atlantic Galway Bay and Islands and Large Limestone Bay (with low-lying/undulating hinterland & coastal wetlands), which are illustrated in **Figure 5-17**.

According to the Regional Seascape Character Assessment for Ireland⁹³, Galway Bay (a large limestone bay) is framed by two distinctive and very different coastlines, north (Connemara) and South (Burren); this seascape character area extends to encompass the Aran Islands. East of Inverin this coastline becomes more regular, and no bays are present until closer to Galway, though numerous quays occur. At this stage Galway City and Docks influence the coastal seascape and can be seen across the bay on the Clare coast. Settlements have taken advantage of sheltered bays where possible, including Galway City and Oranmore. The presence and influence of the sea on the landscape is largely consistent within this seascape character area (SCA); the network of minor roads and connectivity to islands and the frequently long coastal views allow for almost constant views to the sea and across Galway Bay. Closer to Galway City, the visual aspect of the seascape character becomes less expansive. Galway Bay is highly sensitive to changes on land and water, particularly developments on or near the shoreline due to extensive viewing distances. Visual impacts are especially pronounced at coastal extremities and headlands, whereby even small, conspicuous developments can significantly alter distinctive landscape features. The coastline is visible from numerous vantage points, including beaches and other areas valued for recreation and visual amenity.

⁹³ Minogue, R, Foley, K, Collins, T, Hennessy, R, Doherty, P, Vaughan, E & Black, D. 2020. Regional Seascape Character Assessment for Ireland. The Marine Institute (MI). [Definition and Classification of Ireland's Seascapes](#). Accessed: July 2024.

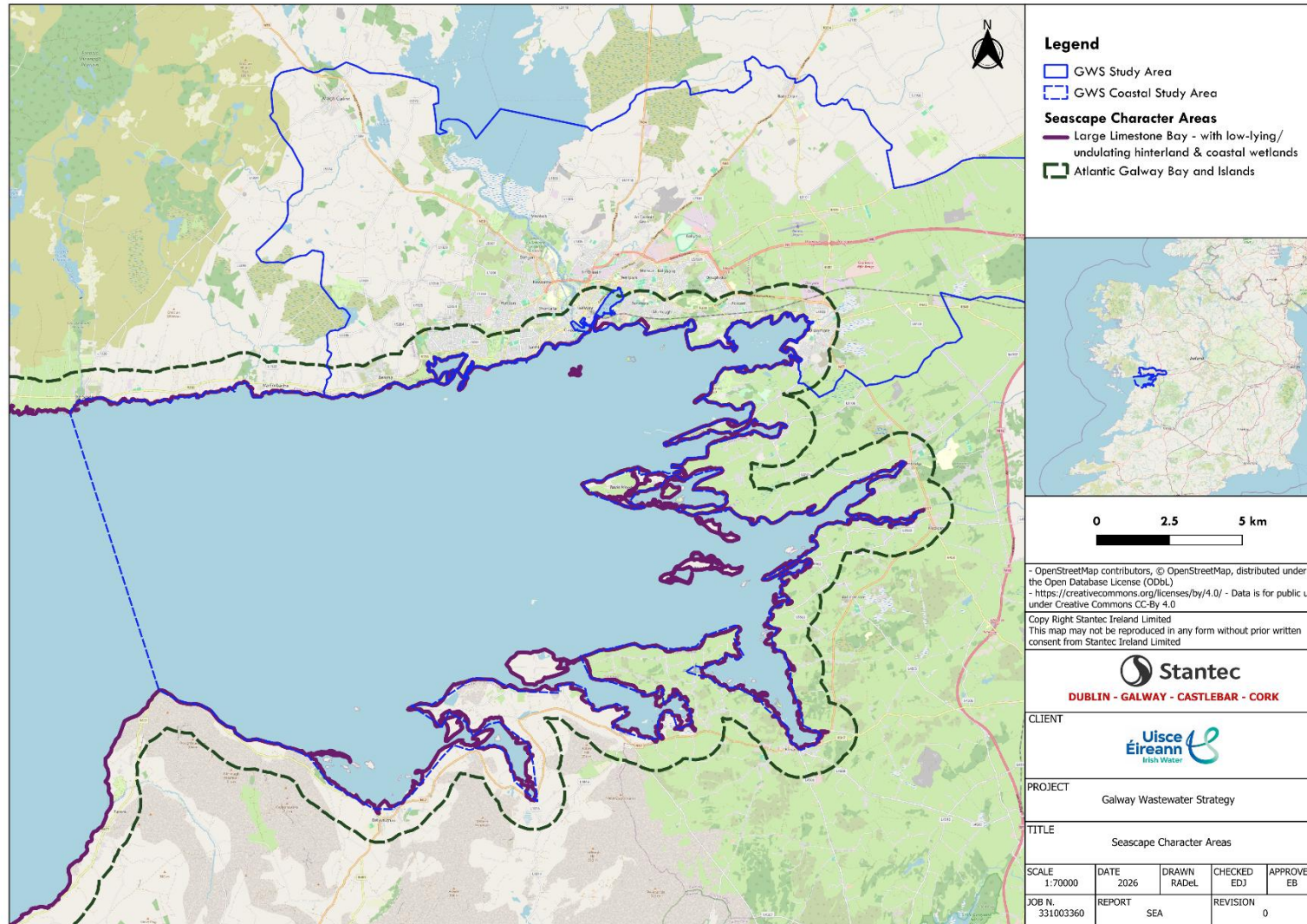


Figure 5-17: Seascape Character Areas

5.13.1.3. Scenic Views and Routes

Figure 5-18 illustrates the Scenic Views and Routes within the draft GWS Study Area. The draft GWS Study Area encompasses several sites and vantage points from which views over areas of great natural beauty, local landmarks, historic landscapes and adjoining counties may be obtained⁹⁴. The scenic views and routes relevant to the study area include:

- Lough Corrib Scenic Route
- Galway Bay Scenic Route

Important views in Galway city include panoramic views, offering expansive outlooks over Galway Bay and the cityscape, and linear views, focused on specific landscapes from particular vantage points. These views contribute significantly to the experience of residents and visitors. While some changes can be absorbed or even enhance the character of a view, others may irreparably diminish its quality. **Figure 5-19** illustrates these panoramic and linear views.

⁹⁴ Galway County Council. 2022. Galway County Development Plan 2022 – 2028 - Appendix 4: Landscape Character Assessment. Available at: [Appendix 4: Landscape Character Assessment](#). Accessed: March 2026.

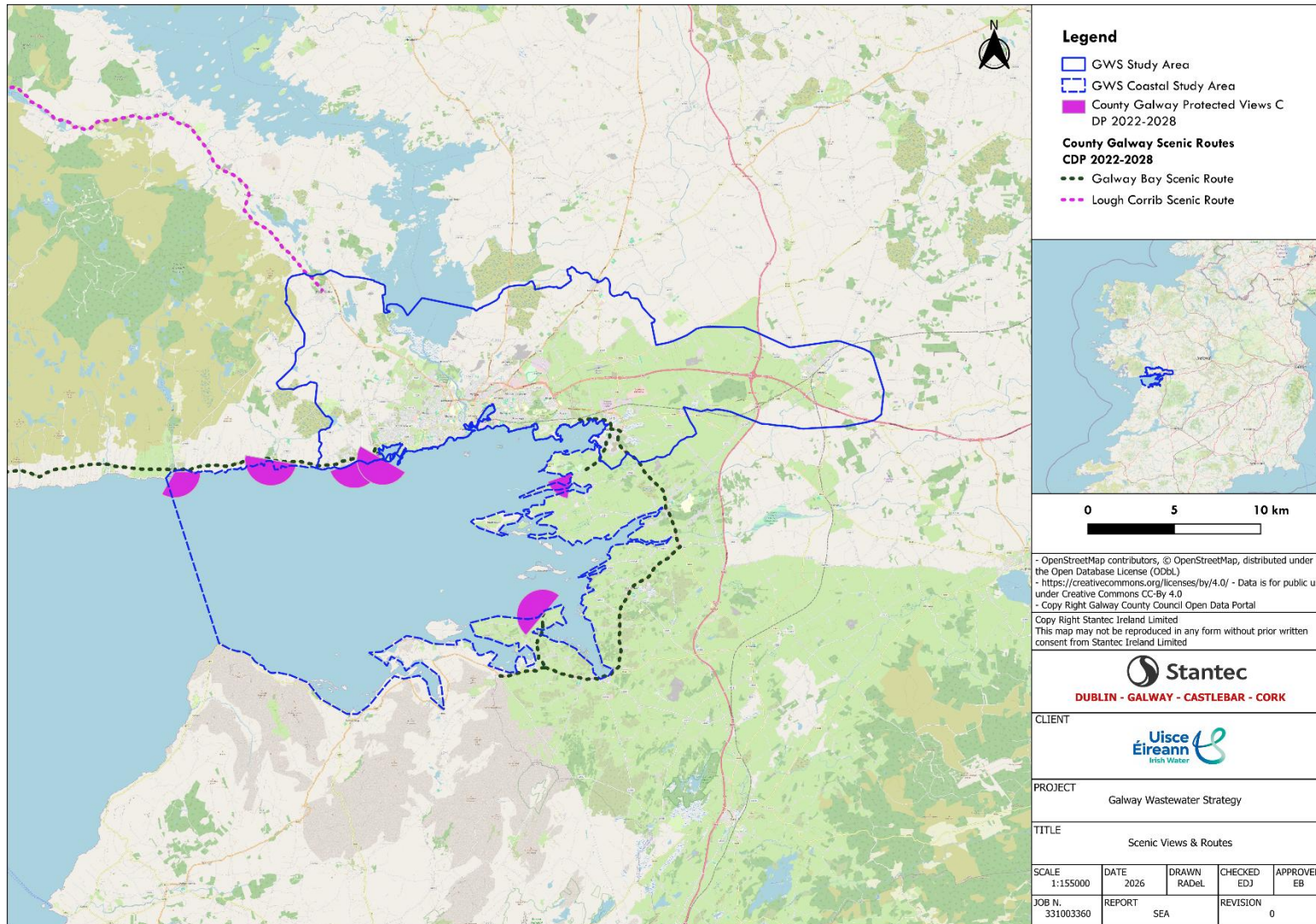


Figure 5-18: Scenic views and routes within, and within the vicinity of, the GWS Study Area

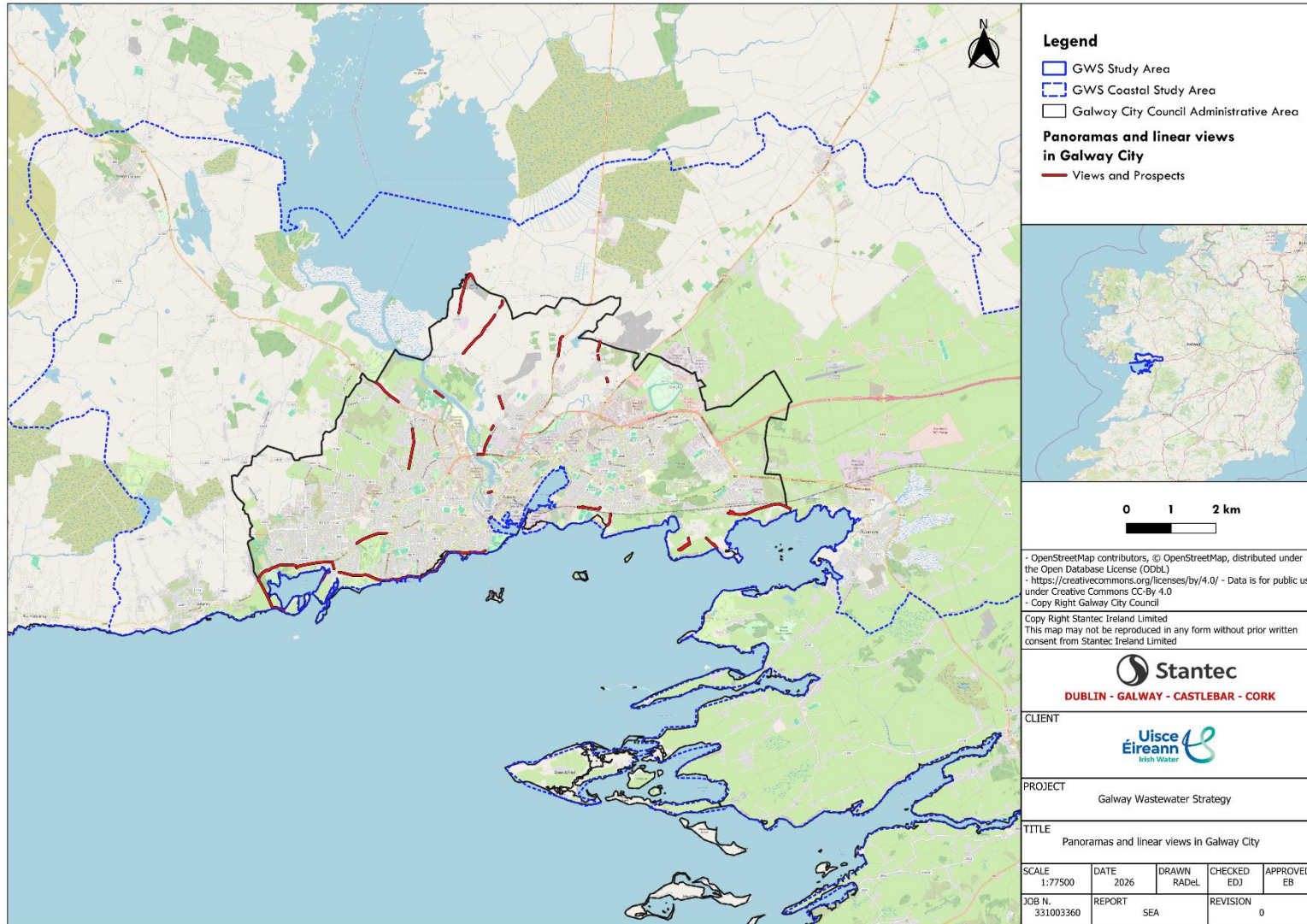


Figure 5-19: Panoramas and linear views within the draft GWS Study Area

5.13.1.4. Light Pollution

Over 60% of Ireland's population live in urban environments and are exposed to light conditions above the natural background level⁹⁵. Urban expansion in the last decade has seen the spread of light into rural areas, and the most recent estimates indicate that 40% of the land area, and 84% of the population, are under skies which are 150% of the natural value, with 18% of the population using daytime vision at night⁹⁶. Rural areas face a higher light pollution risk, as increases there have a greater relative impact than in urban areas.

Man-made light pollution is an area of increasing concern from a sustainability, ecological and health perspective⁹⁷. Unnatural light can affect human health by disrupting physiological and behavioural systems, including the circadian clock that regulates daily activity, sleep, and bodily functions. The glare and spillover from light pollution can also cause eye strain, loss of clear vision, and premature aging of the eyes⁹⁸. Furthermore, perceived light pollution at night can affect quality of life, sleep, and health behaviours^{99,100}. Biodiversity-wise, many mammals, birds, reptiles and insects are naturally photoperiodic. As their behaviour and physiology depend on the circadian rhythms, artificial light can impact their growth, development, reproduction, eating, and locomotion.

Figure 5-20 illustrates a light pollution map, measured in Zenith sky brightness (the illumination level directly overhead) in the vicinity of the study area¹⁰¹. As shown in **Figure 5-20**, urban settlements have significantly degraded skies (19.5-21.3 mag/arcsec² (Bortle Class 4-6)), while severely degraded skies (values less than 19.5 mag/arcsec² (Bortle Class 7-9)) are observed in Galway City Centre.

According to the Galway County Development Plan 2022-2028¹⁰², there is significant potential for the development of dark skies designated areas in the county primarily with the Connemara area due to the low population density and its distance from any major cities means it suffers from minimal light pollution and contains many areas where not a single source of artificial light may be seen. The Council will support the investigation of the development of designated dark skies areas within the most appropriate locations.

⁹⁵ Power, M., Del Campo, A.G., & Espey, B. 2017. Light Pollution: Spatial Analysis and Potential Ecological Effects in Rural Ireland. Irish Geography. Available at: [Light Pollution - Irish Geography](#). Accessed March 2026.

⁹⁶ Falchi, F., Cinzano, P., Duriscoe, D., Kyba, C.C., Elvidge, C.D., Baugh, K., Portnov, B.A., Rybnikova, N.A. & Furgoni, R. 2016. The new world atlas of artificial night sky brightness. Science Advances. Available at: [The New World Atlas of Artificial Night Sky Brightness](#). Accessed: March 2026.

⁹⁷ Dominoni, D.M., & Nelson, R.J. 2018. Artificial light at night as an environmental pollutant: An integrative approach across taxa, biological functions, and scientific disciplines. JEZ- Ecological and Integrative Physiology. Available at: [Artificial Light as an Environmental Pollutant](#). Accessed: March 2026.

⁹⁸ Russart, K.L.G., & Nelson, R.J. 2018. Light at night as an environmental endocrine disruptor. Physiology & Behaviour. Available at: [Light at Night as an Endocrine Disruptor - Physiology & Behaviour](#). Accessed: March 2026.

⁹⁹ Kim, K.H., Choi, J.W., Lee, E., Cho, Y.M., & Ahn, H.R. 2015. A study on the risk perception of light pollution and the process of social amplification of risk in Korea. Environmental Science and Pollution Research International. Available at: [Light Pollution Risk Study](#). Accessed: March 2026.

¹⁰⁰ Harris, K., Spiegelhalter, K., Espie, C.A., MacMahon, K.M., Woods, H.C., & Kyle, S.D. 2015. Sleep-related attentional bias in insomnia: A state-of-the-science review. Clinical Psychology Review. Available at: [Sleep-related Attentional Bias in Insomnia](#). Accessed: March 2026.

¹⁰¹ World Atlas 2015. Light Pollution Map. Available at: [Light pollution map](#). Accessed March 2026.

¹⁰² Galway County Council (GCC). Galway County Development Plan 2022 – 2028: [Adopted Galway County Development Plan 2022-2028](#). Accessed: July 2024.

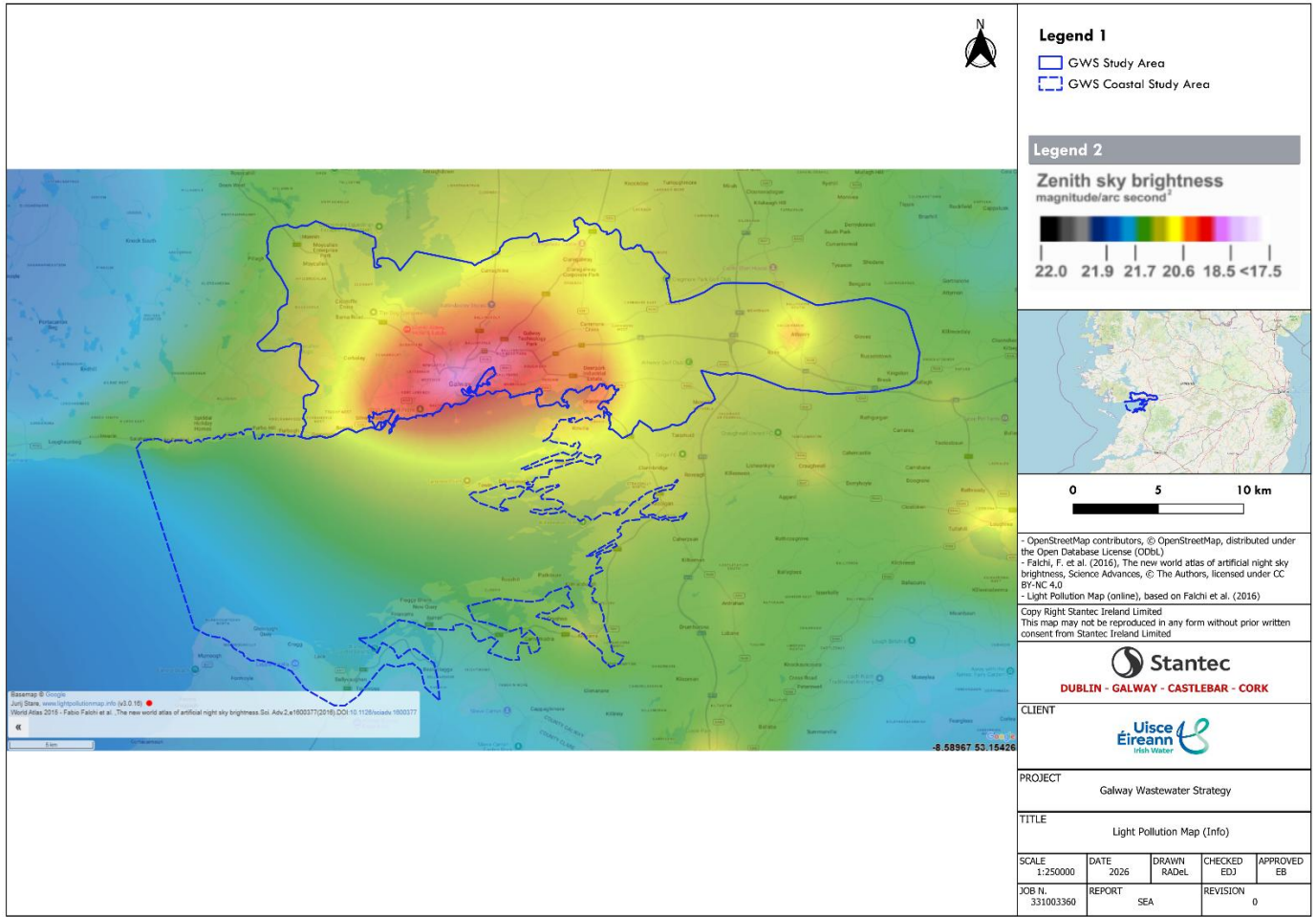


Figure 5-20: Light pollution Map within GWS Study Area¹⁰³

¹⁰³ World Atlas 2015. Light Pollution Map. Available at: [Light pollution map](#). Accessed March 2026.

5.13.2. Future Trends

The European Landscape Convention promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues. The Convention was adopted on the 20 October 2000 and came into force on the 1 March 2004. The Convention was ratified by Ireland in 2002 and has now been ratified by thirty-eight countries¹⁰⁴. The National Landscape Strategy for Ireland 2015-2025¹⁰⁵ will be used to ensure compliance with the European Landscape Convention and to establish principles for protecting and enhancing the landscape while positively managing its change. It will provide a high-level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions.

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

5.13.3. Key Considerations for the Draft GWS and the SEA

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

Challenges

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

Opportunities

- Opportunities for enhancements linked to biodiversity and water quality improvement measures, such as restoring riparian corridors, nature-based solutions, and catchment management approaches such as network optimisation, stormwater management to reduce inflows, strategic temporary storage, and source control to reduce pollutants entering the network.

¹⁰⁴ Department of Arts, Heritage and the Gaeltacht. 2015. Available at: [National Landscape Strategy for Ireland 2015-2025](#). Accessed: January 2026.

¹⁰⁵ Department of Arts, Heritage and the Gaeltacht. 2015. Available at: [National Landscape Strategy for Ireland 2015-2025](#). Accessed: January 2026.

5.14 Cultural Heritage – Archaeological and Architectural

5.14.1. Cultural Heritage

Cultural heritage encompasses Ireland’s tangible and intangible assets, including historic buildings, archaeological sites, monuments, landscapes, and traditions. Protecting these resources ensures the preservation of national identity, historical continuity, and community values within planning and development processes. Architectural heritage is defined in the Architectural Heritage (National Inventory) and Historic Monuments Act 1999 as comprising: structures and buildings, together with their settings and attendant grounds, fixtures and fittings; groups of such structures and buildings; and sites of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

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

- Archaeological sites monuments included on the Records of Monuments and Places (RMPs) and/or Site and Monuments Record (SMR) and
- Architectural structures and sites included on the Record of Protected Structures (RPS) and/or National Inventory of Architectural Heritage (NIAH).

5.14.1.1. Record of Monuments and Places

Section 12(1) of the National Monuments (Amendment) Act 1994 requires the Minister for Housing, Local Government and Heritage to establish and maintain the Record of Monuments and Places (RMP). The RMP comprises a list and mapped record of known monuments and archaeological sites in each county. Monuments included in this record are referred to as “Recorded Monuments”. Under Section 12(3) of the 1994 Act, any proposed works at or in relation to a Recorded Monument require prior written notice to the Minister. Works may not commence for two months following notification, except in cases of urgent necessity and with Ministerial consent. RMP designation represents the most widely applied protective mechanism under the National Monuments legislative framework.

The National Monuments Acts 1930–2014 established the statutory framework for the protection and preservation of Ireland’s national monuments and archaeological heritage. The Acts provide for the protection of archaeological sites and monuments, regulate archaeological works, and safeguard portable archaeological objects. The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 (No. 26 of 2023) was enacted to repeal and replace the National Monuments Acts 1930–2014 as the primary legislation governing archaeological and historic heritage protection. Although the 2023 Act is now law, not all provisions have commenced. Until full commencement, the earlier National Monuments Acts 1930–2014 and related heritage legislation continue to apply where relevant.

5.14.1.2. National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) was established in 1990 to fulfil Ireland’s obligations under the 1985 Convention for the Protection of the Architectural Heritage of Europe. Article 1 defines ‘architectural heritage’ under three broad categories of Monument, Groups of Buildings, and Sites.

- Monument: all buildings and structures of conspicuous historical, archaeological, artistic, scientific, social or technical interest, including their fixtures and fittings.
- Group of buildings: homogeneous groups of urban or rural buildings conspicuous for their historical, archaeological, artistic, scientific, social or technical interest, which are sufficiently coherent to form topographically definable units.
- Sites: the combined works of man and nature, being areas, which are partially built upon and sufficiently distinctive and homogenous to be topographically definable, and are of conspicuous historical, archaeological, artistic, scientific, social or technical interest.

Structures are rated as National, Regional, Local or Record Only. Those of Regional significance or higher are recommended for inclusion on the Record of Protected Structures (RPS). Planning authorities must consider NIAH-rated Regional, National and International structures for the RPS, and assess those of Local importance.

5.14.1.3. Record of Protected Structures

The Planning and Development Act 2000 (as amended) requires each planning authority to compile and maintain a Record of Protected Structures (RPS), which forms part of the authority's development plan. Protected structures include buildings and groups of buildings, including streetscapes and townscapes, of special architectural, historical, archaeological, artistic, scientific, social or technical interest. When considering proposals for works to a protected structure or proposed protected structure, local authorities have regard to the Architectural Heritage Protection Guidelines for Planning Authorities 2011¹⁰⁶ which sets out best practice conservation principles. Planning authorities are required to have regard to NIAH ratings of Regional, National and International importance for inclusion in their RPS, and to consider those of Local significance.

5.14.1.4. Sites and Monuments Record

The Sites and Monuments Records (SMR) is an archaeological inventory that can be viewed on an online map viewer¹⁰⁷. Its entries only become legally protected when incorporated into the statutory RMP under the National Monuments legislation.

5.14.1.5. Architectural Conservation Areas

An Architectural Conservation Area (ACA) is a statutory designation under Part IV of the Planning and Development Act 2000 (as amended) that is used in Ireland to protect the special architectural character of a group of buildings, streetscape, or area, rather than an individual structure.

Outside of Galway City, there are three Architectural Conservation Areas (ACAs) designated in the study area¹⁰⁸, which are listed below:

- Athenry Town Centre ACA
- Bearna Pier Road ACA

¹⁰⁶ Department of Arts, Heritage and the Gaeltacht. 2011. Architectural Heritage Protection – Guidelines for Planning Authorities. Available at: [Guidelines for Planning Authorities](#). Accessed: February 2026.

¹⁰⁷ Tailte Éireann. n.d. Historic Environment Viewer. Available at: [Historic Environment Viewer](#). Accessed: January 2026.

¹⁰⁸ Galway County Council. 2022. Galway County Development Plan – Appendix 7 Architectural Conservation Areas. Available at: [Appendix 7-Architectural Conservation Area.pdf](#). Accessed: January 2026.

- Oranmore Town Centre ACA

According to the SEA for Galway City development plan 2023-2029¹⁰⁹, Galway City contains 11 designated ACAs:

- The City Core ACA
- Lower Dominick ACA
- The Crecent / Sea Road ACA
- The Long Walk ACA
- St Nicholas Street ACA
- St. Mary's Terrace
- Number 1-6 Dock Road
- Eyre Square
- Number 11-18 University Road
- Number 7-14 Presentation Road
- Number 34-38 St. Mary's Road

There are more than 300 entities under NIAH and 600 entities under protected structures within the study area. According to the SEA for Galway City Development Plan 2023 – 2029, given its historic character, Galway City centre is identified as a Zone of Archaeological Notification, and there are many archaeological sites throughout the plan area, notably clustered around the historic core. The Galway City Heritage Plan 2025-2030¹¹⁰ aims to promote best practice in heritage conservation and management, preserving the City's cultural and historical assets while enhancing how we engage with and experience Galway's rich heritage.

5.14.1.6. Underwater Archaeological Heritage

The National Monuments Service is responsible for the protection and preservation of Ireland's underwater cultural heritage. Its Underwater Archaeology Unit undertakes a broad range of functions, including maintaining the archaeological record, conducting research, survey and excavation, and regulating activities affecting underwater heritage. The Unit manages the Wreck Viewer and the Wreck Inventory of Ireland Database. It also assesses proposed developments with potential to impact underwater archaeology and provides recommendations to planning authorities and other regulatory bodies¹¹¹. **Figure 5-25** shows shipwreck locations, sourced from the National Monuments Service Underwater Archaeology Unit Wreck Viewer¹¹², in the vicinity of the study area.

Figure 5-21, Figure 5-22, Figure 5-23, Figure 5-24, and Figure 5-25 show areas of archaeological, architectural, and cultural heritage areas within the draft GWS Study Area.

¹⁰⁹ Galway City Council. 2023. Galway City Development Plan 2023-2029 Strategic Environmental Assessment. Available at: [SEA Environmental Report](#). Accessed: June 2024.

¹¹⁰ Galway City Council (GCC). 2025. Galway City Heritage Plan 2025-2030. Available at: [Dréachtphlean Oidhreachta Chathair na Gaillimhe 2024-2029](#). Accessed: February 2026.

¹¹¹ National Monuments Service. Underwater Cultural Heritage. Accessed: July 2024. Available from: <https://www.archaeology.ie/underwater-archaeology>.

¹¹² Department of Housing, Local Government, and Heritage (DHLGH). 2023. National Monuments Service: Wreck Viewer. Available at: [National Monuments Service: Wreck Viewer](#). Accessed: February 2026.

5.14.2. Cultural Heritage Baseline Condition

There is no World Heritage Site in the vicinity of the study area¹¹³. Nevertheless, there are many sites of significant archaeological interest within the study area, as per **Figure 5-21**, which shows the spatial distribution of sites and monuments records¹¹⁴, which are protected under The National Monuments Acts 1930–2014. More than seven hundred of these sites and monuments have been identified within the study area, including graveyards, castles, forts, crosses and churches. Zones of Notification, which are defined areas surrounding a Recorded Monument within which archaeological protection measures apply, must also be considered.

Although evidence for Mesolithic activity in Galway is scarce, neolithic archaeology is more evident due to the presence of several known megalithic monuments¹¹⁵. In 2014, an investigation headed by Ireland's Underwater Archaeology Unit unearthed a series of sunken dug-out canoes in Lough Corrib¹¹⁶, which also contained a miniature armoury of weapons of Viking origin.

¹¹³ UNESCO World Heritage Sites in Ireland. 2025. Available at: [UNESCO World Heritage Sites on the island of Ireland | Ireland.com](https://www.ireland.com/en/heritage/unesco-world-heritage-sites-on-the-island-of-ireland). Accessed: March 2026.

¹¹⁴ Tailte Éireann. n.d. Historic Environment Viewer. Available at: [Historic Environment Viewer](https://www.tailte.ie/). Accessed: January 2026.

¹¹⁵ Geological Survey Ireland (GSI) & Marine Institute (MI). n.d. Shipwrecks. Available at: [INFOMAR - Shipwrecks Ireland](https://www.infomar.ie/). Accessed: July 2024.

¹¹⁶ Current Archaeology. 2014. The Longboats in the Lake. Available at: [Logboats in the Lake - Current Archaeology](https://www.currentarchaeology.com/). Accessed: July 2024.

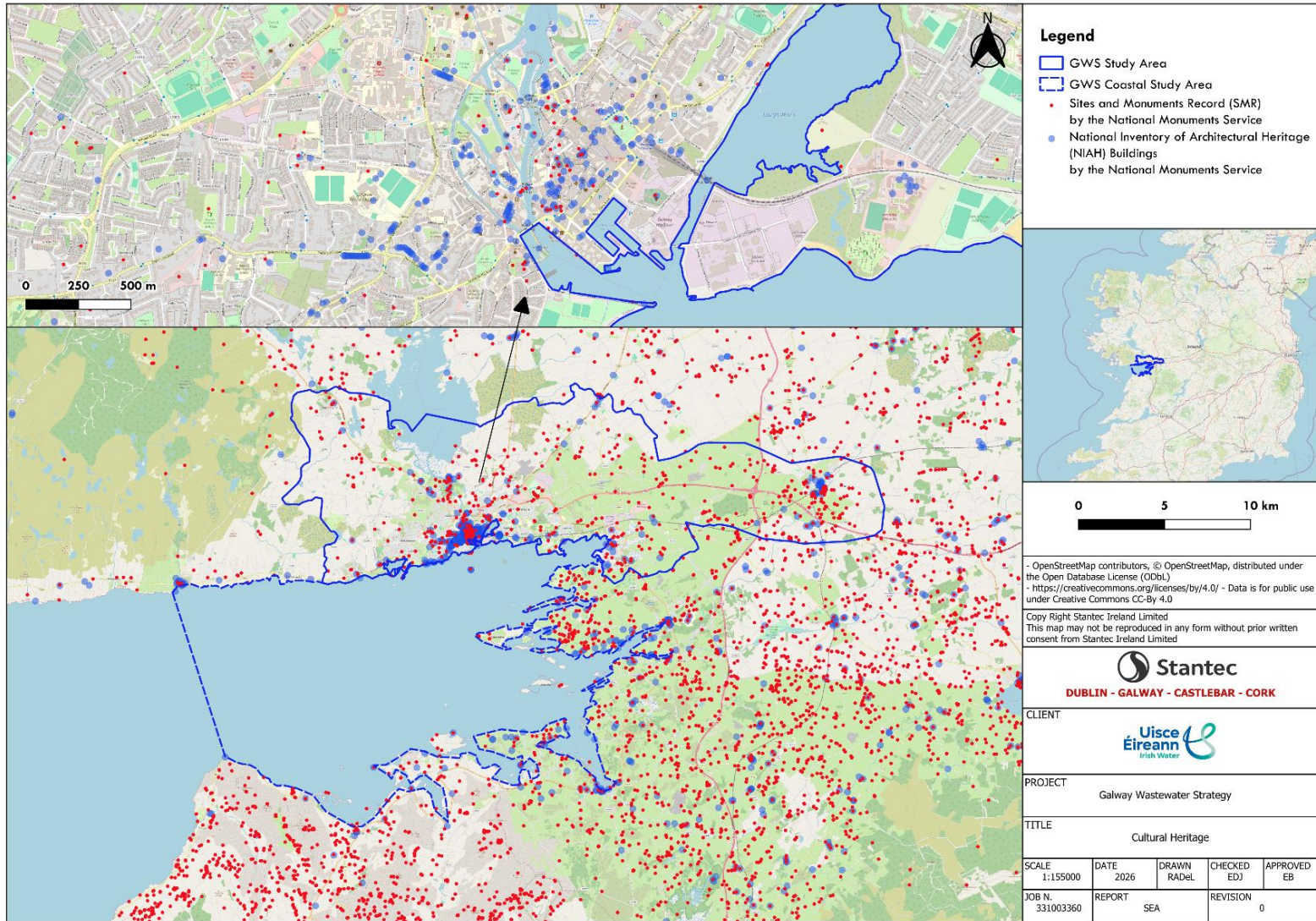


Figure 5-21: Sites and Monuments Records and National Inventory of Architectural Buildings within the draft GWS Study Area

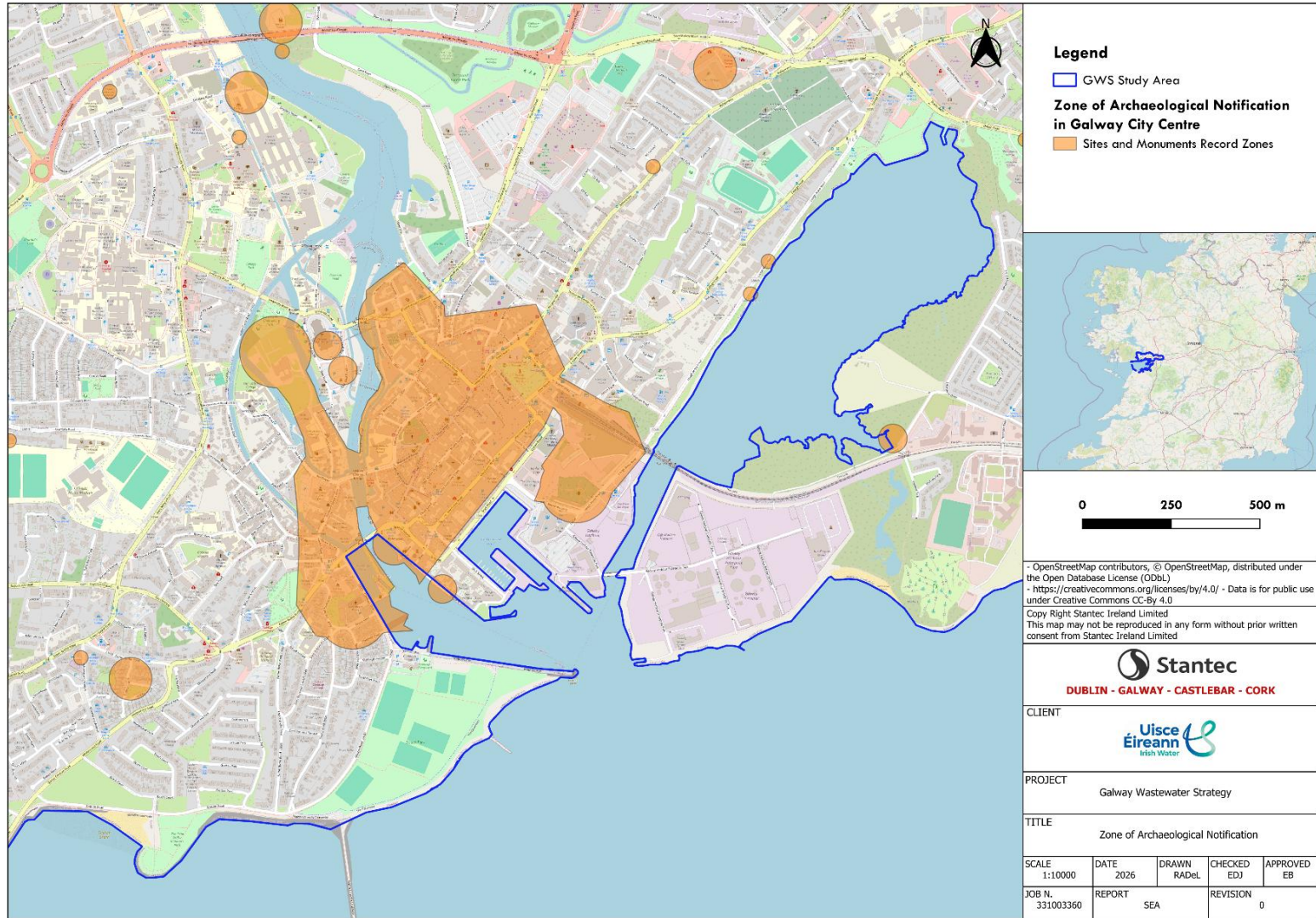


Figure 5-22: Zones of Archaeological Notification in Galway City

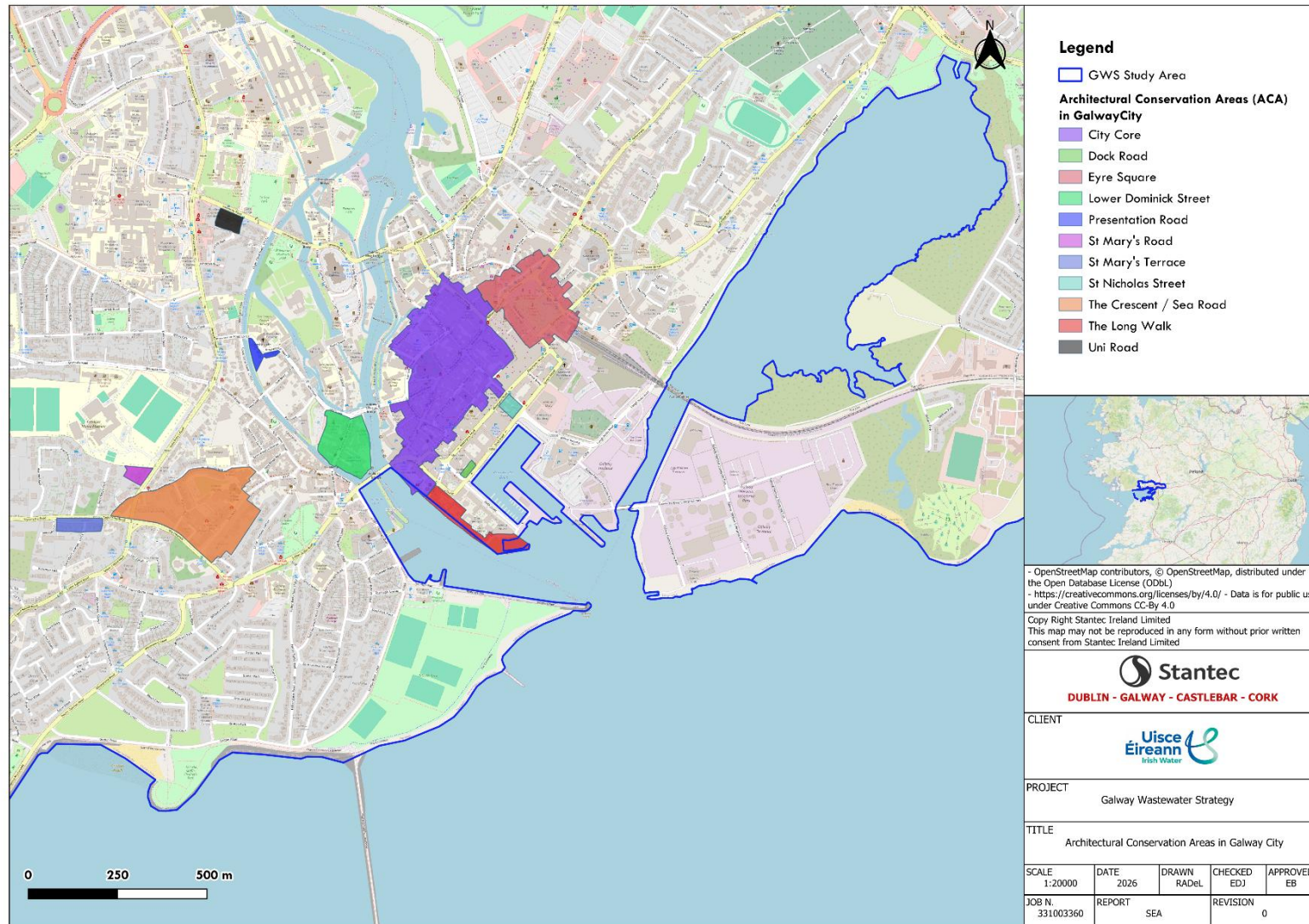


Figure 5-23: Architectural Conservation Areas (ACAs) within Galway City

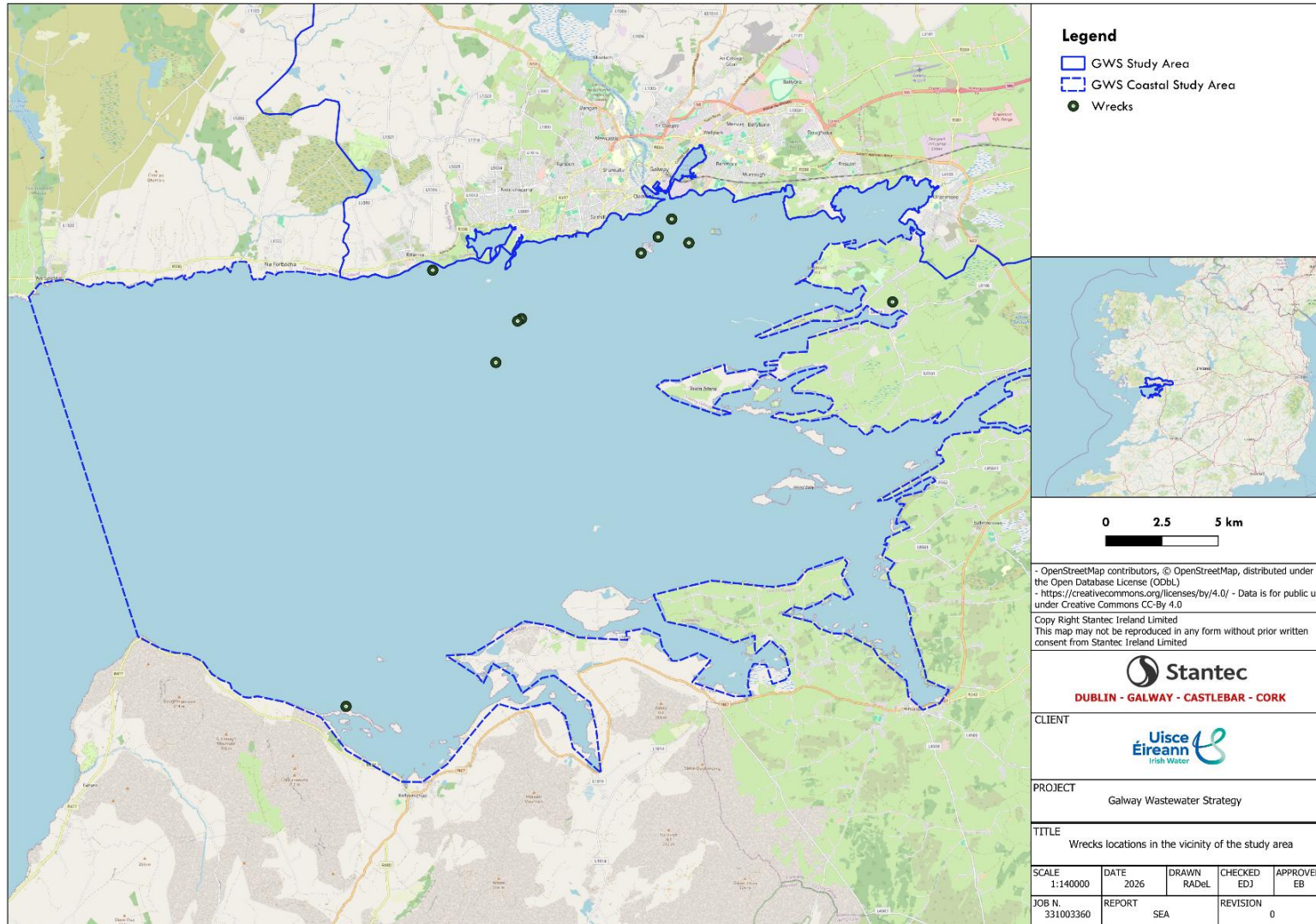


Figure 5-25: Shipwrecks within the vicinity of the draft GWS Study Area

5.14.3. Future Trends

The National Heritage Plan, Heritage Ireland 2030¹¹⁷, sets out a wide range of actions aimed at protecting and nurturing Ireland's heritage and recognising the importance of community engagement and the links to biodiversity and climate change. The Plan outlines how Heritage Ireland 2030 will be delivered through an integrated implementation and oversight structure which will ensure regular interrogation of objectives. These objectives are to be realised through an Action Plan which will be reviewed each year over the lifetime of the strategy. The annual review of objectives and actions will be informed by nationwide engagement.

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 (Number 26 of 2023), which repeals and replaces the National Monuments Acts 1930–2014, introduces a single integrated licencing system, statutory codes of practice, and legal protection for new archaeological finds. These reforms strengthen the protection of designated and undesignated heritage assets. However, heritage remains vulnerable to development impacts, climate change, and habitat loss, which may affect settings or damage previously unknown buried remains.

5.14.4. Key Considerations for the Draft GWS and the SEA

The key challenges and opportunities in relation to Cultural Heritage for the draft GWS and SEA include:

Challenges

- The potential for the construction of wastewater treatment infrastructure to damage archaeological and architectural heritage monuments/sites or affect access to or the settings of sites/monuments.
- The potential for new structures to impact the context or visual setting of heritage sites/monuments.
- New developments could be constrained by the need to avoid and protect sites/monuments and their settings.
- Potential to uncover (and damage) unknown, undesignated archaeological remains, including underwater and marine archaeology

Opportunities

- Integrating heritage protection with biodiversity conservation and climate action objectives.
- Potential to record, add to, and improve knowledge, documentation, and public access to cultural and archaeological heritage.

¹¹⁷ Department of Housing, Local Government, and heritage (DHLGH). 2022. Heritage Ireland 2030. Available from: [Heritage Ireland 2030](#). Accessed: July 2024.

5.15 Geology and Soils

5.15.1. Geology baseline Condition

County and City Geological Sites are important geological or geomorphological sites identified, audited, and recommended for protection by Geological Survey of Ireland (GSI). Several City and County Geological Sites are identified in or in the vicinity of the study area as per **Table 5-16** and illustrated in **Figure 5-26**. The audit of County Geological Sites of County Galway was completed in 2019, and the audit of County Geological Sites of Galway City was completed in 2020. County Geological Sites are identified through County Geological Heritage Audits and are proposed for protection in the relevant County Development Plan.

Table 5-16: Galway City and Galway County¹¹⁸ Geological Sites within the draft GWS study area

County and City Geological Sites	Description
Lough Corrib	A large lake situated between County Galway's western acidic uplands and the limestone lowlands
Two Mile Ditch Quarry	A very large working quarry
Gortgar Drumlins	A group of northeast – southwest (NE-SW) oriented drumlins. The drumlins are a representative sample of the drumlin field occupying high ground between Moycullen and An Spidéal.
Knocknagreana	Site includes rocky outcrops and a boulder beach along a coastal section between Bearna and Na Forbacha.
Lippa	This site consists of a rocky promontory at the southern end of a storm beach.
Rusheen Bay Drumlins	A group of coastal drumlins, some with eroded cliff-faces, and intertidal boulder fields indicating the footprint of the drumlins prior to coastal erosion.
Salthill promenade	Coastal section of granite outcrops among sandy cobble beaches.
St. Augustine's well	A freshwater karst spring on the shore of a saline tidal lagoon, and the site of a well-known Holy Well.

¹¹⁸ Hennessy, R., Meehan, R., Gallagher, V., Parkes, M. & Glanville, C. 2020. The Geological Heritage of Galway City. Geological Survey Ireland. Available at: [The Geological Heritage of County Galway](#). Accessed: March 2026.

County and City Geological Sites	Description
Merlin Park Cave	Large conical enclosed depression with a narrow cave mouth at its floor.
Merlin Park Quarry	A disused limestone quarry.
Doughiska N6 Road Cut	A one-kilometre-long road cut section on the N6 dual-carriageway. Cut into Lower Carboniferous (Mississippian) pale grey limestone of the Burren Formation, dated at around 330 million years old.
Terryland River (Sink/Rising)	A river with an unusual flow regime, which either flows out of the River Corrib and disappears underground, or rises and flows to the Corrib, via two estavelles.
Shantalla Sliding Rock	Prominent landmark with historical significance set in a 1940s suburban housing estate amenity park.
Westside Sports Grounds	Granite outcrops situated in a public amenity area.
Fairlands Park	Metamorphic outcrops situated in suburban estate on the west bank of the River Corrib.
Menlough Quarry	A large, disused quarry on the south shore of Lough Corrib.
Menlough Mushroom Rocks	Mushroom rocks on limestone pavement, with limestone and granite erratic boulders.
Black Head (County Clare)	Coastal cliffs and roadside pavement exposure. Limestone pavement with well-developed karst features ¹¹⁹ .

¹¹⁹ Geological Survey Ireland (GSI). 2012. Clare - County Geological Site Report – Black Head. Available at: [Clare - County Geological Site Report](#). Accessed: March 2026.

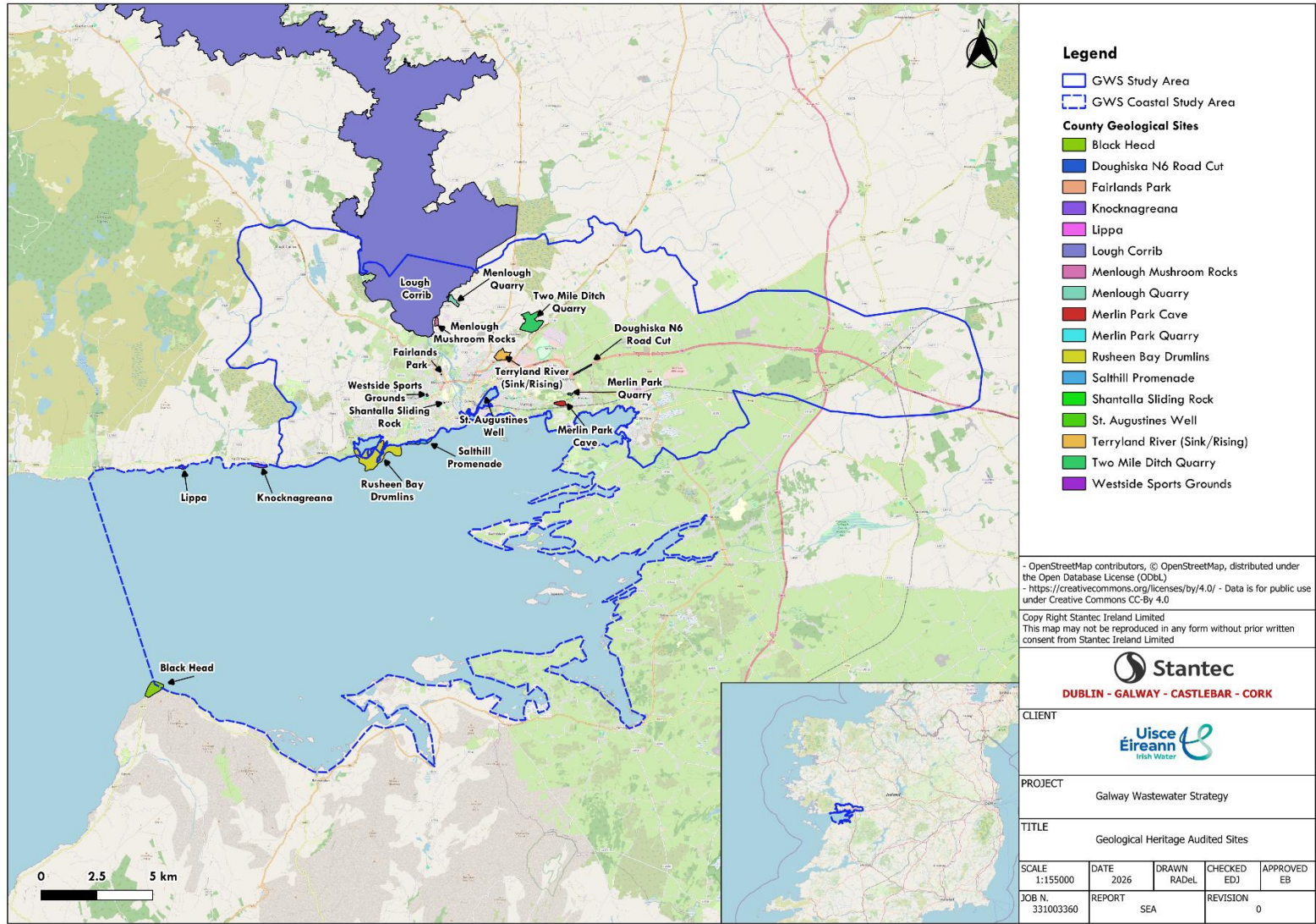


Figure 5-26: County and City Geological Sites in the draft GWS Study Area

5.15.2. Soil Baseline Condition

The EU Soil Strategy for 2030¹²⁰ outlines the EU's commitment to fostering sustainable soil management practices, restoring degraded soils, and mobilising resources to achieve long-term soil health for the prosperity of future generations. This strategy is closely linked to the EU Biodiversity Strategy for 2030 and the EU Nature Restoration Regulation (2024/1991). Its medium-term objectives, to be achieved by 2030, include combating desertification, restoring degraded land and soils affected by drought, floods, or desertification, and striving for a land-degradation-neutral world. Significant areas of degraded and carbon-rich ecosystems, including soils, are to be restored. Its long-term objectives, looking towards 2050, aim to reduce soil pollution to levels no longer harmful to human health or natural ecosystems, respecting planetary boundaries and creating a toxic-free environment. The strategy also seeks to achieve a climate-neutral Europe, with the first step being land-based climate neutrality within the EU by 2035.

The soil monitoring law (Directive (EU) 2025/2360) of the European Parliament and of the Council of 12 November 2025 on soil monitoring and resilience) entered into force on 16 December 2025. The soil monitoring law aims to address key soil threats in the EU, such as erosion, loss of soil organic matter, salinisation, contamination, compaction, and sealing, and loss of soil biodiversity. It provides a legal framework to help achieve healthy soils by 2050. It will do so by:

- Requiring Member States to monitor and assess soil health
- Supporting farmers and soil managers to help improve soil health and resilience
- Putting in place a solution to the long-standing issue of contaminated sites in the EU
- Improving knowledge about soil health and improving its resilience, contributing to the EU's climate and biodiversity goals, as well as competitiveness and food security.

EU Member States must transpose the Directive's provisions into their national law by December 2028, and Ireland has not yet enacted its national implementing measures.

Bedrock and Soil maps in the vicinity of the study area are illustrated in **Figure 5-27** and **Figure 5-28**. Alluvium is found primarily along Corrib_020, Terryland_010, Clare (Galway)_100 in Claregalway, Clarinbridge_020, and dispersed across the eastern side of Galway City. Most of the soils within Galway City and suburbs are classified as "Made" – soils which have been distributed, transported or manipulated by urban activities. Lands to the west of Galway City are underlain by Granite till and Peat, while lands to the east of the city are underlain by karsitified limestone and limestone till. Granitic rocks are acidic and poorly drained, whilst limestone rocks are alkaline and porous. There is potential for contamination of water resources as a result of the limestone/karst geology, especially to the east of the city¹²¹. Given the urban character and historical land-use activities particularly in the city centre and harbour area, soil contamination may have occurred in brownfield lands. Other soil types identified within the study area include:

¹²⁰ European Commission - Publications Office of the European Union. 2021. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on European missions. EU Soil Strategy for 2030. Reaping the benefits of healthy soils for people, food, nature, and climate. Available at: [EU Soil Strategy \(ESS\) 2023](#). Accessed February 2026.

¹²¹ Galway City Council, 2022. Natura Impact Report of Galway City Development Plan 2023-2029. Available at: [Natura Impact Report | Galway City Council Online Consultation Portal](#). Accessed February 2026.

- Grey, Brown Podzolic / Brown Earth Basic
- Acid Brown Earths / Brown Podzolic
- Lithosols / Regosols

Active raised bog (7120) and Active blanket bog (7130) are priority habitats under Annex 1 of the Habitats Directive (92/43/EC). Undamaged peatlands (or bogs) provide important ecosystem services, such as flood prevention and are a significant store of fossil carbon. Raised bogs are extremely rare in global terms and are sites of European and international importance. Active raised bog is particularly important as it is continuing to lay down peat. A significant portion of the world's remaining active raised bogs can be found in Ireland. Many raised and blanket bogs have been designated as SACs under the EU Habitats Directive (92/43/EEC) and/or as Natural Heritage Areas under the Wildlife (Amendment) Act 2000. Raised bogs and cutaway raised bogs are found mainly in the eastern areas of the Lough Corrib with blanket bog common to the west of the Corrib.

5.15.2.1. Soil quality or contamination

The EPA's State of the Environment 2024¹²² highlights threats to soil health such as soil sealing, compaction, erosion, salinisation, nutrient imbalance, organic carbon loss, contamination, and loss of biodiversity. Soil contamination can occur as a result of unauthorised waste-related activities, historical activities, leakages and accidental spillages of chemicals. The EPA is responsible for enforcing the remediation of contamination identified at EPA-licensed facilities but there is currently no specific contaminated land policy or legislation in Ireland.

5.15.2.2. Soil and the circular economy

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

¹²² Environmental Protection Agency (EPA). 2024. Ireland's State of the Environment Report 2024. Available at: [Ireland's State of the Environment Report 2024](#). Accessed: January 2026

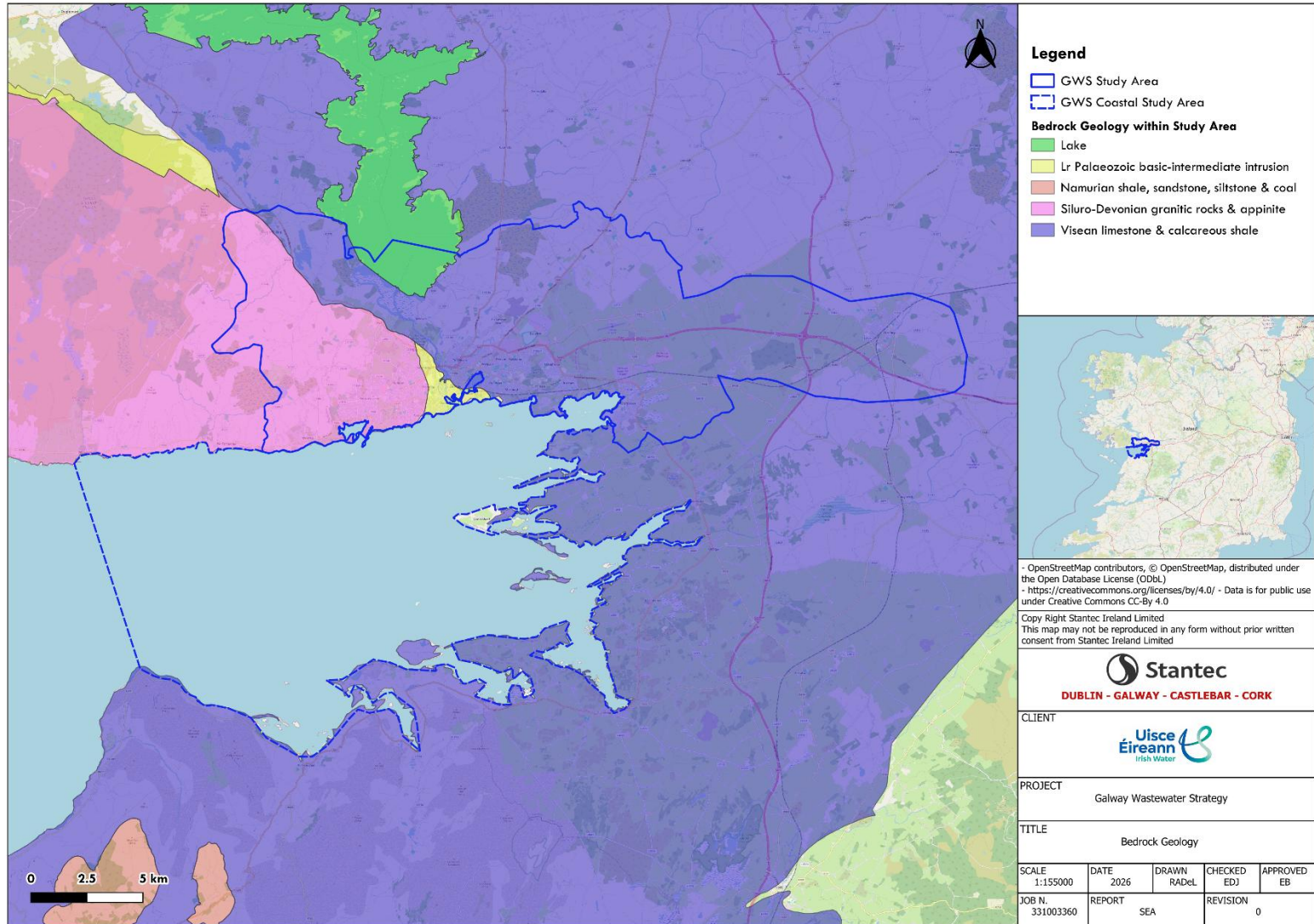


Figure 5-27: Bedrock Geology within the draft GWS Study Area

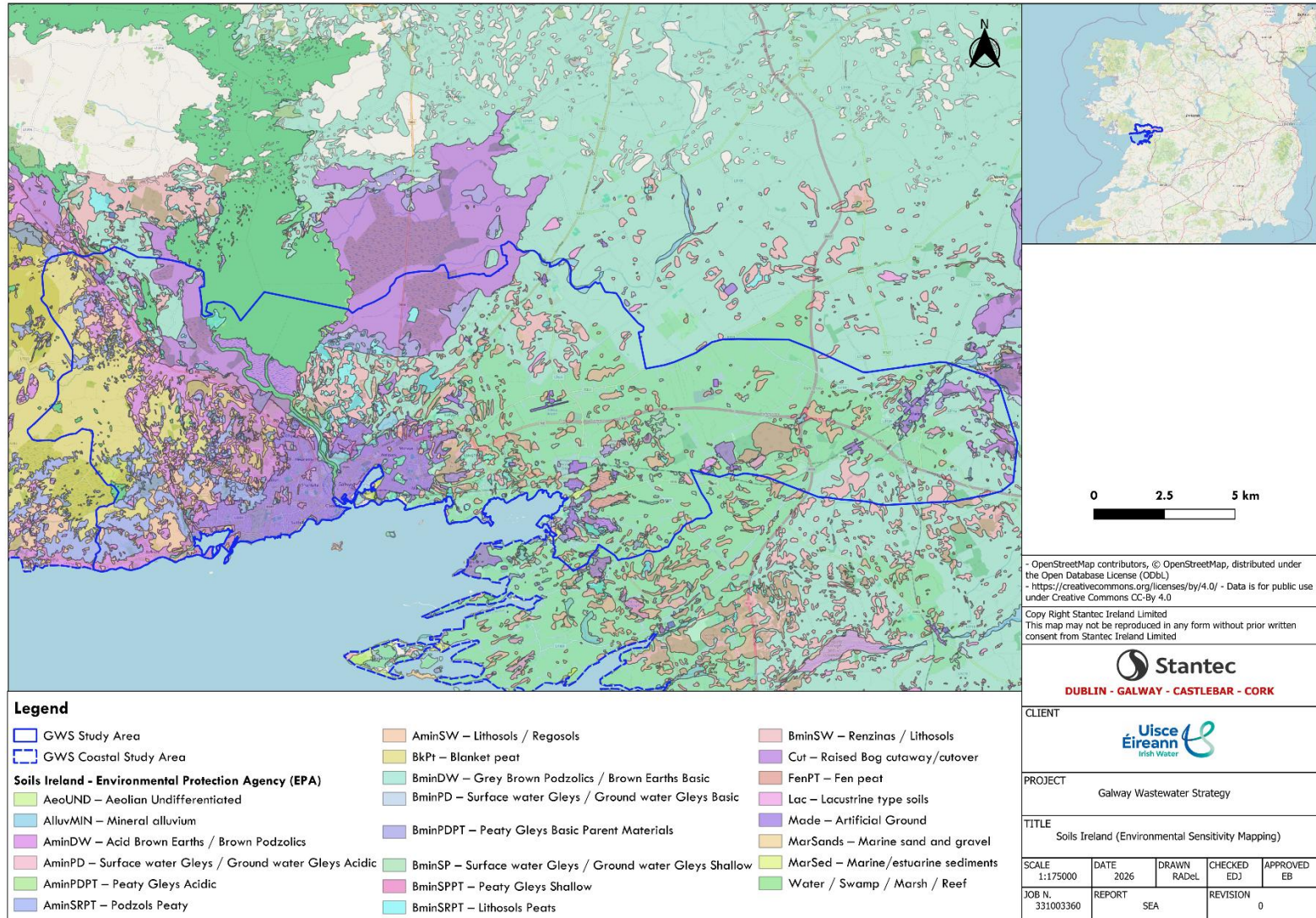


Figure 5-28: Soils Ireland (EPA) Soil Types and Environmental Sensitivity in the draft GWS Study Area

5.15.3. Future Trends

While geological processes are typically understood to occur over very long timescales, changes in soils can happen much more quickly. Factors such as shifts in water regimes, climate change, and land-use practices can significantly affect soil carbon storage, nutrient levels, and erosion rates. These soil-related changes occur within timeframes that are directly relevant to the draft GWS. Soils and the ecosystem services they support are resources that need to be protected, monitored and managed, from high-level national and sectoral land use plans through to local management activities on farms, forest plantations, peatlands, urban and rural settlements. The draft GWS must consider the EU Soil Strategy for 2030's medium-term and long-term objectives, which seek to reduce soil pollution and to achieve a land-based climate neutrality within the EU by 2035. The soil monitoring law (Directive (EU) 2025/2360) must be transposed into Irish national law by December 2028. This Directive will require Ireland to monitor and assess soil health and to find solutions to contaminated site-related issues.

5.15.4. Key Considerations for the Draft GWS and the SEA

Key challenges and opportunities in relation to geology and soils potentially relevant to the draft GWS and the SEA include:

Challenges

- Construction of wastewater infrastructure may result in permanent land take, the loss of productive and natural soils, and soil sealing. This reduces soil's ability to provide ecosystem services such as water filtration, carbon storage, and habitat support.
- Poor soil management during construction and operation could increase susceptibility to erosion and cause sediment and nutrient-rich runoff entering waterbodies, negatively affecting water quality.
- The potential for construction to disturb or damage Geological Resources and Protected Sites
- The potential for landspreading of treated wastewater sludge to spread heavy metals or contaminants, leading to soil degradation and/or waterbody pollution through runoff or leaching. This will be addressed in the National Bioresources Strategy, which will replace the National Wastewater Sludge Management Plan.

Opportunities

- Opportunities to use soil management plans to apply hierarchy to avoid loss and promote reuse and maintain soil health.
- Land spreading of treated wastewater sludge will provide nutrient return to soils, improved soil fertility and structure.

5.16 Air Quality

5.16.1. Air Quality Baseline Condition

Air pollution can come from many sources, for example: household fuel burning, industrial chimneys, traffic exhausts, power generation, open burning of waste, agricultural practices, desert dust and many other sources. Air pollutants include PM_{2.5} and PM₁₀ (particles with an aerodynamic diameter of equal or less than 2.5, also called fine, and 10 micrometre respectively), ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO) and sulphur dioxide (SO₂). According to the World Health Organisation (WHO), air pollution is a major environmental risk to our health, and can increase the risk of stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma. It is estimated that there are approximately 1,300 premature deaths annually in Ireland¹²³ due to poor air quality from fine particulate matter (PM_{2.5}).

Under the EU's Green Deal's Zero Pollution Action Plan¹²⁴, the European Commission set the 2030 goal of reducing the number of premature deaths caused by fine particulate matter (PM_{2.5}, a key air pollutant), by at least 55% compared with 2005 levels. In 2022, the European Commission published a proposal to review the ambient air quality directives, aiming, among other things, to align the air quality standards more closely with WHO recommendations.

The Ambient Air Quality and Cleaner Air for Europe Directive (2008/50/EC) (CAFÉ Directive) set binding standards for pollutants to protect human health and the environment. The recast Ambient Air Quality and Cleaner Air for Europe Directive (2024/2881), which entered into force in December 2024, updates and strengthens EU air quality standards. The recast Ambient Air Quality and Cleaner Air for Europe Directive must be transposed into the national law of each EU Member State no later than 11 December 2026. An EU Member State is bound by an EU Directive even if it hasn't transposed it, but the effects are limited until transposition happens.

An Air Zone is part of the State defined by the EPA for the purpose of assessing and managing air quality in line with EU Ambient Air Quality Directives. In Ireland, four Air Zones have been defined in the Air Quality Standards Regulations (S.I. No. 180 of 2011). The Air Zones in the study area are summarised in **Table 5-17**.

Table 5-17: Air Zones within the draft GWS Study Area

Major Towns within the study area	Air Zone
Galway City and suburbs	C
Oranmore	Majority D; small part within C
Bearna	C

¹²³ Environmental Protection Agency (EPA). 2021. Air Quality in Ireland Report 2021. Available at: [Air Quality in Ireland Report 2021](#). Accessed: July 2024.

¹²⁴ European Union – European Commission. 2021. Zero Pollution Action Plan. Available at: [Energy, Climate change, Environment - Zero Pollution Action Plan 2021](#). Accessed: July 2024

Major Towns within the study area	Air Zone
Athenry	D
Moycullen	D
Claregalway	D

According to Air Quality in Ireland Report 2022, Ireland met all of its EU CAFÉ Directive legal requirements¹²⁵. Galway City 2024 Air Quality data at three monitoring locations shows that the daily threshold for PM10 particulate matter suspended in the air was breached once, and the hourly limit for Nitrogen Dioxide (NO₂) was not breached at all in 2024¹²⁶. **Table 5-18** summarises this data at Galway's three air quality monitoring locations.

The water industry generally has a limited impact on air quality; however, wastewater treatment facilities can occasionally give rise to localized odour nuisances. Compliance with EU and Irish air pollution Directive and regulations is required, and opportunities to minimize emissions should be proactively identified and implemented where feasible.

Table 5-18: Selected pollutants measured in 2022 and 2023 against EU Air Quality Directives

Stations	NO ₂ > 200 µg/m ³	PM10 Days > 50 µg/m ³
Rahoon Road	N/A	0
Eyre Square	0	1
Briarhill	0	0

5.16.2. Future Trends

In 2021, WHO published new Air Quality Guidelines (AQGs) to serve as a global target for national, regional and city governments to work towards improving their citizen's health by reducing air pollution. The WHO AQS recommend levels and interim targets for common air pollutants: PM, O₃, NO₂, and SO₂.

Under the EU Green Deal's Zero Pollution Action Plan, the European Commission set a target to reduce premature deaths caused by fine particulate matter (PM_{2.5}) by at least 55% by 2030

¹²⁵Environmental Protection Agency (EPA). 2022. Air Quality in Ireland Report 2022. Available at: [Air Quality in Ireland Report - 2022](#). Accessed: July 2024.

¹²⁶Environmental Protection Agency (EPA). 2025. Air Quality Bulletin December 2024. Available at: [Annual-Air-Quality-Bulletin-2024.pdf](#). Accessed: February 2026.

compared with 2005 levels. The recast Ambient Air Quality and Cleaner Air for Europe Directive (EU) 2024/2881, which entered into force in December 2024, updates and strengthens EU air quality standards. Member States are required to transpose the Directive into national law by 11 December 2026. Currently air quality within the study area is of an acceptable standard within both EU legislative and target values, however achieving the WHO Air Quality Guidelines, particularly for annual NO₂ level of 10 µg/m³ in the future will be challenging for Galway and Ireland as whole.

Galway City Council's Local Authority Climate Action Plan 2024 - 2029 has a range of strategies and measures to tackle climate change, which are also related to the air quality, including the 'Air We Share' project linking citizen science and creativity in relation to air quality. According to EPA Clean Air Together¹²⁷, Galway City Council is in the top three local authorities for electrifying their fleet with 22% of the fleet already electrified. Galway City Council will become the first Local Authority in the country to eliminate road diesel in its larger fleet, by transitioning to Hydrotreated Vegetable Oil (HVO) as a renewable fuel source. The development of safe and reliable cycling and pedestrian networks in Galway City as part of the Galway Transport Strategy has potential to have positive impacts on air quality, with the recently opened Salmon Weir Pedestrian and Cycle Bridge a good example of this.

5.16.3. Key Considerations for the Draft GWS and the SEA

Key challenges and opportunities in relation to air quality potentially relevant for the draft GWS and the SEA include:

Challenges

- The temporary generation of air pollution during the construction phase of wastewater infrastructure development
- Odour can be a concern from wastewater treatment and agricultural sludge spreading and new facility design or upgrades to wastewater treatment will need to take account of standards required in relation to receptors around plants and good practice approaches for sludge spreading and storage

Opportunities

- Upgrades to existing infrastructure and the provision of new services present an opportunity to utilise technologies that produce less odour.

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

¹²⁷ Environmental Protection Agency (EPA). 2024. Clean Air Together – Understanding the Results. Available at: [Clean-Air-Together-Galway-City](#). Accessed: July 2024.

5.17 Noise and Vibration

5.17.1. Noise and Vibration Baseline Condition

Environmental noise can be defined as unwanted or harmful outdoor sound created by human activities, including noise from transport sources and from industry. The Environmental Noise Directive (2002/49/EC) (END) establishes a common European framework for assessing and managing environmental noise. It requires strategic noise mapping and action plans for major roads, railways, airports and urban areas, with the aim of avoiding, preventing or reducing harmful effects, including annoyance. The Directive does not set binding noise limit values, leaving specific measures to the discretion of the competent authorities. The END was transposed in Ireland via the Environmental Noise Regulations 2006 (S.I. No. 140 of 2006), which were later revoked and replaced by the European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549/2018) (as amended). The EPA is designated as the National Authority charged with overseeing the implementation of the Regulations. Limit values are left to each member state. In Project Ireland 2040 - The National Planning Framework, noise is treated as an environmental and health issue that must be managed through planning and development decisions.

In Ireland, construction noise is treated as a temporary source and is managed through planning conditions, adherence to best practice guidance, and time-of-day restrictions. Wastewater treatment plants are regulated as industrial or fixed plant sources, with noise controlled through environmental licences issued by the EPA or via planning conditions, typically using background-related assessment criteria rather than fixed national limit values.

The WHO's Environmental Noise Guidelines for the European Region (2018) sets source-specific environmental noise guideline values for major sources, including road traffic, railways and aircraft, as well as for wind turbines. These guideline levels are based on epidemiological evidence and identify exposure thresholds above which the risk of adverse health outcomes — including annoyance, sleep disturbance and, at higher exposures, cardiovascular effects — increases. The road traffic noise exposure in the study area is illustrated in **Figure 5-29**.

The population noise exposure in Galway City¹²⁸, is summarised in **Table 5-19**.

¹²⁸ Transport Infrastructure Ireland: Galway City Noise Mapping Round 3 (2017) Lden: [galwaycity_lden_rev01.pdf \(tii.ie\)](#); Lnight: [GalwayCity_Lnight_Rev01.pdf \(tii.ie\)](#) Accessed: July 2024

Table 5-19: Population noise exposure in Galway City

L_{den}	Approximate Number of People	L_{night}	Approximate Number of People
> 55 dB(A)	15,911	> 50 dB(A)	10,833
> 65 dB(A)	4,836	> 60 dB(A)	1,200
> 75 dB(A)	2	> 70 dB(A)	0

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

5.17.2. Future Trends

A recent EPA research report¹²⁹ estimates that 256 noise-induced ischaemic heart disease (IHD) cases, 296,471 highly annoyed (HA) cases and 109,951 highly sleep disturbed (HSD) cases, as well as 14,091 disability-adjusted life years (DALYs), were attributable to environmental noise from road traffic, railways and aircraft. Results from this analysis indicate that exposure to environmental noise, particularly road traffic noise, accounts for a relatively large proportion of all IHD disease, and those affected by HA and HSD represent a large proportion of the population. The report recommends amending the Environmental Noise Directive 2002/49/EC to introduce EU-wide exposure limit values, with Ireland advocating for phased implementation. It also recommends that Ireland establish national environmental noise limits to protect public health and develop a clear national definition of “quiet areas” in line with international best practice.

Galway City Council Noise Action Plan (2024-2028)¹³⁰ sets out how Galway City Council will manage environmental noise along major roads within its functional area, particularly, where the noise exposure levels have the potential to have harmful effects on human health. Galway City Council will endeavour to maintain satisfactory noise environments where they exist and will have regard to acoustical planning in the planning process (within the confines of the 2000 Planning and Development Act as amended) to ensure that future developments include provision to protect the population from the effects of environmental noise in the interests of residential amenity and public health. The programme of works for the Galway City Noise Action Plan includes measures to monitor noise, carry out an assessment of the potential noise mitigation including cost-benefit

¹²⁹ Murphy, E., Faulkner, J-P., Mac Domhnaill, C., Lyons, S., Nolan, A., Douglas, O., 2022. Environmental Transport Noise and Health: Evidence from Ireland (Noise–Health) EPA Report No. 423. Available at: [Research Report 423.pdf](#). Accessed February 2026.

¹³⁰ Galway City Council, 2024. Noise Action Plan 2024-2028. Available at: [GCC Noise Action Plan \(NAP\) 2024 - 2028](#). Accessed January 2026.

analysis, and procure noise mitigation works. The following roads are within the functional area of Galway County Council, and are considered in its Noise Action Plan:

- National Roads: N6, N59, N59, N83, N84
- Regional Roads: R336, R337, R338, R339, R446, R863, R864, R865, R866, R921
- Local Roads: L1002, L1010, L1011, L1012, L1013, L5048, L5147

Outside Galway City, Galway County Council's Draft Noise Action Plan 2024 – 2028¹³¹ identified ten Priority Important Areas (PIAs), all of which are located in the villages of Moycullen, Bearna, Oranmore and Claregalway, for which Galway County Council give a commitment to undertake an assessment of noise mitigation measures within the life cycle of the Galway County Noise Action Plan.

5.17.3. Key Considerations for the Draft GWS and the SEA

The key challenges and opportunities in relation to noise and vibration potentially relevant to the draft GWS and SEA include:

Challenges

- Noise from wastewater infrastructure works: Temporary and ongoing noise generated during the construction and operation of wastewater pipelines, pumping stations, and associated infrastructure.
- Noise from wastewater treatment activities and sludge handling including noise from plant and equipment, heavy goods vehicle (HGV) movements, and sludge processing and disposal activities.

Opportunities

- Noise and vibration standards will be considered in design and procurement
- Where sensitive receptors may be affected by noise, mitigation will be put in place

In the context of the development of the draft GWS, the challenges and opportunities related to noise and vibration are considered localised issues to be addressed through the application of appropriate standards at programme and project levels. **Noise and Vibration is therefore scoped out of further assessment.**

5.18 Interrelated SEA Topics

Environmental topics are interconnected, and changes in one area can affect others.

Table 5-20 shows how the SEA topics outlined in Sections 5.8 to 5.17 are interlinked. These connections will be explored further in the next stages of the SEA. All topics could experience positive or negative effects from implementation of the draft GWS.

¹³¹ Galway County Council, 2024. Draft Noise Action Plan 2024-2028. Available at: [Draft Noise Action Plan 2024 – 2028 | Galway County Council Online Consultation Portal](#). Accessed January 2026.

Table 5-20 Interrelated SEA topics

Population, Economy, Tourism and Recreation, and Human Health (P1)	Y							
Climate Change (C1)	Y	Y						
Biodiversity (B1)	Y	Y	Y					
Material Assets (M1)	Y	Y	Y	N				
Landscape, Townscape and Seascape (L1)	Y	Y	Y	Y	Y			
Cultural Heritage (H1)	Y	Y	N	N	Y	Y		
Geology and Soils (G1)	Y	Y	N	Y	Y	Y	Y	
Air Quality (A1)	N	Y	Y	Y	N	N	N	Y
Water (W1)	Y	Y	Y	Y	Y	Y	Y	Y
	Water (W1)	Population, Economy, Tourism and Recreation, and Human Health (P1)	Climate Change (C1)	Biodiversity (B1)	Material Assets (M1)	Landscape, Townscape and Seascape (L1)	Cultural Heritage (H1)	Geology and Soils (G1)

6. Legislation, Policies, Plans, and Programmes

6.1 Introduction

Article 5(1)(a) of the SEA Directive and the guidance provided in Annex I of the SEA Directive states that SEA Environmental Assessment must identify *“the environmental protection objectives, established at International, European Union or national level, which are relevant to the plan or programme, or modification to the plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation”*. In accordance with this requirement, and as part of setting the context for the SEA and the draft GWS, a review of relevant plans, policies, programmes, and the legislative framework is essential. This review, covering international (European), national, regional, and sub-regional levels as appropriate, identifies wider environmental protection objectives and examines how the draft GWS may be influenced by or contribute to the aims, objectives, and targets of these documents.

The review has been undertaken in two stages firstly as a comprehensive review of legislation and plans, to identify those directly relevant for the draft GWS and SEA (SEA Environmental Report **Appendix A**) and a further review focusing on the how those identified can inform the scope of the baseline and the assessment including the Strategic Environmental Objectives. Those considered most influential are outlined in more detail in the following **Section 6.2**, in keeping with EPA guidance¹³², which recommends focus on key policy and plans.

6.2 Key Influences and interactions

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

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

6.2.1. Water Resources and Water Quality Plans and Policies

6.2.1.1. Water Framework Directive and River Basin Management Plan

The EU Water Framework Directive (2000/60/EC) (WFD) establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. The WFD requires an integrated approach to the sustainable management and protection of water resources. It impacts on, and is equally impacted by, a diverse range of environmental plans, policy, and

¹³² EPA, 2023. SEA Pack. Available at: [SEA Pack EPA - Updated 2023](#). Accessed January 2026.

legislation. Member states transpose the WFD through national regulations which also define the responsibilities for monitoring different water categories, provide detailed procedures for assessing the quality elements, and set out the methods for characterising and classifying status. The primary aim of the WFD is to maintain and/or improve the ecological status or potential of all waterbodies, and to prevent the deterioration of their associated WFD quality elements and overall ecological status or potential. Ecological status is determined by a suite of biological and supporting physicochemical and hydromorphological quality elements.

Article 4 of the WFD sets out its Environmental Objectives – these include:

- To protect/maintain and where necessary to improve the quality of all our inland surface waters, transitional, coastal and groundwaters, and to prevent their further deterioration
- To achieve ‘Good Status’ for all these waters by 2015, with extensions under exemptions up to 2027
- For waterbodies that are designated as artificial or heavily modified, the objective is to achieve ‘Good Ecological Potential’ by 2015, with extensions under exemptions up to 2027
- Comply with objectives and standards for protected areas
- To promote the sustainable use of water based on the long-term protection of available water resources
- To reduce the pollution of water by particularly hazardous ‘priority’ substances

The WFD was transposed in Ireland by S.I. No. 722 of 2003 European Communities (Water Policy) Regulations 2003 (as amended). S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations 2009 (as amended) and S.I. No. 9 of 2010 European Communities Environmental Objectives (Groundwater) Regulations 2010 (as amended) give further effect to the WFD, by outlining water monitoring thresholds and requirements.

The WFD is closely linked to other EU environmental legislation that reinforces its objectives. For example, the recast Drinking Water Directive (EU 2020/2184) and the Bathing Waters Directive (2006/7/EC) safeguard water quality for human consumption and recreation. The Urban Wastewater Directive (UWWTD) (EU Council Directive 91/271/EEC) and its recast Directive - Directive 2024/3019 concerning urban wastewater treatment (recast), known as the recast Urban Wastewater Treatment Directive (rUWWTD), aim to ensure environmentally sustainable treatment and processing of urban wastewater. The Nitrates Directive (91/676/EEC) addresses nutrient pollution from agriculture. The UWWTD, rUWWTD, and the Nitrates Directive aim to reduce pressures on water bodies, which is critical to achieving WFD targets. Biodiversity protection under the Birds Directive (2009/147/EC) and Habitats Directive (92/43/EEC) supports healthy aquatic ecosystems, reinforcing the ecological objectives of the WFD. Additionally, the Environmental Impact Assessment (EIA) Directive (2011/92/EU, amended by 2014/52/EU) and the Industrial Emissions Directive (2010/75/EU) and its updated Directive (EU) (2024/1785) regulate activities that may affect water quality. Complementary measures include the Groundwater Directive (2006/118/EC), Environmental Quality Standards Directive (2008/105/EC, amended by 2013/39/EU), and the Floods Directive (2007/60/EC), all of which provide standards and risk management frameworks that underpin WFD implementation. Together, these Directives create an integrated EU legal framework that guides investments, policy, and management practices,

ensuring that human activities, agricultural pressures, and industrial operations do not compromise the ecological integrity, chemical status, or safe use of Europe's water resources. A River Basin Management Plan (RBMP) serves as the principal national plan for implementing the objectives of the Water Framework Directive (WFD). Article 13 of the WFD requires member states to produce a RBMP every six years which sets out how organisations, stakeholders and communities will work together to improve the water environment and fulfil the requirements of the WFD. The Water Action Plan 2024 is Ireland's RBMP for this current third WFD Cycle. Its key measures include wastewater projects, upgrading wastewater treatment plants, and improvements to collection systems¹³³. The requirements to achieve "Good" or better status/potential for all waterbodies by 2027 as well as ensuring that water quality does not deteriorate as per the Water Framework Directive is set out within chapter 5 of the Water Action Plan 2024. A key issue highlighted in the Water Action Plan 2024 is the need for targeted investment by Uisce Éireann to eliminate sewage pollution from all WwTPs identified as primary pollution sources, along with the urgent requirement to upgrade or replace certain WwTPs. Both the draft GWS and its SEA must consider the objectives and targets of Ireland's RBMP, including the specific actions outlined for Uisce Éireann. The WFD is central to developing the draft GWS, providing the framework for managing Uisce Éireann's wastewater operations and guiding investments to improve treatment facilities and accommodate future growth. The WFD underpins the draft GWS by requiring all water bodies to achieve "good status," shaping how wastewater is treated and discharged. It drives investment in infrastructure and stricter pollution controls to protect rivers, lakes, and coastal waters while supporting sustainable water management.

Further details on the WFD and the current baseline and key trends for the water environment are presented in **Section 5.8** of this SEA Environmental Report.

6.2.1.2. Urban Wastewater Treatment Directive

The Urban Wastewater Treatment Directive (UWWTD) (EU Council Directive 91/271/EEC of 21 May 1991) is concerned with urban wastewater collection, wastewater treatment, and its discharge. It sets standards for both treatment and disposal of sewage for communities of more than 2,000 person equivalents (PE) as well as monitoring requirements for wastewater discharges from urban areas. The Directive mandates that urban wastewater must be properly collected and treated to prevent pollution of the environment, particularly sensitive water bodies. It also requires that stormwater overflows, such as Combined Sewer Overflows (CSOs), are controlled and minimised to prevent environmental damage during heavy rainfall events.

The recast Urban Wastewater Treatment Directive (EU) 2024/3019 (rUWWTD) is designed to better protect the environment and public health, support the EU's climate goals and circular economy, and modernise urban wastewater management. Provisions of the rUWWTD include wastewater collection and treatment required for all urban areas $\geq 1,000$ PE, secondary treatment (removal of biodegradable organic matter) must be applied in all agglomerations $\geq 1,000$ PE, and tertiary treatment (nutrient removal e.g., nitrogen and phosphorus) becomes mandatory for larger plants ($\geq 150,000$ PE) by 2039. Quaternary treatment, targeting micropollutants like pharmaceuticals and

¹³³ Department of Housing, Planning and Local Government (DHPLG). 2024. Water Action Plan (WAP) 2024. Available at: [Water Action Plan \(WAP\) - River Basin Management Plan \(RBMP\)](#). Accessed: January 2026

PFAS, will be required for agglomerations over 150,000 PE (and conditionally over 10,000 PE by risk assessment) by 2045. The rUWWTD requires that stormwater overflows, such as Combined Sewer Overflows (CSOs), are controlled and minimized to prevent environmental damage during heavy rainfall events. An indicative non-binding objective has been introduced, which sets out that storm water overflow represents less than 2% of the annual collected urban wastewater load calculated in dry weather conditions. The rUWWTD has not yet been transposed into Irish law, as it was only recently finalised at the EU level. The Department of Housing, Local Government and Heritage is currently working on the transposition, with a deadline set for 31 July 2027. An EU Member State is bound by an EU Directive even if it hasn't transposed it, but the effects are limited until transposition happens. Requirements of the rUWWTD including stricter nitrogen and phosphorous removal, stormwater overflow (SWO) objectives, and tertiary and quaternary treatment requirements have informed the draft GWS. **Table 6-1** below outlines the key elements of the rUWWTD which have informed the GWS.

Table 6-1: Key elements of the rUWWTD which have informed the draft GWS

Topic	Requirement
Nutrient removal	Stricter removal of nitrogen and phosphorus for agglomerations larger than 10,000 PE, particularly those discharging to areas sensitive to eutrophication.
Treatment Level	Tertiary treatment will be mandatory for WWTPs treating over 150,000 PE by 2039 and over 10,000 PE, discharging to sensitive areas, by 2045. Quaternary treatment, targeting micropollutants, will be required for agglomerations over 150,000 PE (and conditionally over 10,000 PE by risk assessment) by 2045.
Storm Water Overflows	A future non-binding objective is outlined in Annex V, which sets out that SWOs must represent "a small percentage that cannot be more than 2% of the annual collected urban wastewater load calculated in dry weather conditions"
Energy Target	Sites treating over 10,000 PE will need to achieve energy neutrality by 2045.
Integrated Urban Wastewater Management Plan (IUWWMP)	IUWWMP must be established for agglomerations of 100,000 PE and above by December 2033. For those agglomerations between 10,000 PE and 100,000 PE, where storm water overflow or urban runoff pose risks to the environment and/or public health, a list of "at risk" agglomerations must be established by no later than June 2028 – this includes the Galway City agglomeration.

6.2.1.3. Floods Directive

Floods and changing weather patterns create major challenges for urban drainage systems. They can overwhelm stormwater systems, leading to increased discharges and a higher risk of flooding. This vulnerability also threatens water treatment and supply infrastructure and can disrupt related services such as electricity supply and transportation access. The EU Floods Directive

(2007/60/EC) is transposed in Ireland by S.I. No. 122 of 2010 European Communities (Assessment and Management of Flood Risks) Regulations 2010. The Office of Public Works (OPW) is the lead agency in Ireland responsible for the coordination and implementation of national flood risk management policy and is the competent authority for the implementation of the Floods Directive. The OPW has been implementing the Directive mainly through the Catchment-based Flood Risk Assessment and Management (CFRAM) Programme, identifying areas where risks associated with flooding might be significant (Areas of Further Assessment, or AFAs) and developing measures to address these risks. The Floods Directive aims to reduce the adverse consequences on human health, the environment, cultural heritage and economic activity associated with floods in the Community.

The Floods Directive is important for the draft GWS as it requires the assessment and management of flood risks to reduce impacts on communities, infrastructure, and the environment. It ensures wastewater systems are designed to be resilient to flooding, minimising overflow events and protecting water quality during extreme weather conditions.

6.2.1.4. Marine Planning

The Marine Spatial Planning Directive (Directive 2014/89/EU) establishes a framework for maritime spatial planning across EU Member States. As part of implementing the Marine Spatial Planning Directive, Ireland's National Marine Planning Framework¹³⁴ (NMPF) has been produced to provide guidance for activities and developments affecting the marine environment up to 2040. The NMPF provides a framework for sustainable planning and management of marine resources, balancing ecological, economic and social objectives in relation to aspects such as the environment, biodiversity, commercial fisheries and renewable energy. As part of this, the NMPF includes specific objectives and planning policies related to water quality and to wastewater treatment and disposal. The Maritime Area Planning Act 2021 (No. 50 of 2021) (as amended) creates a legal framework for marine planning and regulates the use of Ireland's maritime areas. The Maritime Area Regulatory Authority (MARA), established in July 2023, is Ireland's independent regulator for all activities in the maritime area, and authorises, regulates and oversees how Ireland's seas and seabed are used. As the draft GWS interacts with coastal waters, implementation of the strategy must ensure that wastewater discharges are managed in a way that protects coastal and marine ecosystems.

6.2.1.5. Water Services Act

The Water Services Act 2013, No. 30 of 2013 (as amended) provides the legal framework for the delivery and regulation of water and wastewater services in Ireland. The legislation underpins the draft GWS as it ensures that public water and wastewater services are managed in a safe, sustainable, and economically efficient way.

6.2.1.6. Bathing Water Directive

The Bathing Water Directive (2006/7/EC) requires Member States to monitor and assess designated bathing waters, classifying them as excellent, good, sufficient, or poor based on

¹³⁴ Department of Housing, Planning and Local Government (DHPLG). 2023. National Marine Planning Framework. Available from: [National Marine Planning Framework \(NMPF\)](#). Accessed: July 2024

levels of faecal bacteria such as *E. coli*. A revision of the Directive is underway. Key proposed updates include stricter microbiological standards, enhanced monitoring and reporting, improved public information and greater EU-wide consistency. As the draft GWS interacts with bathing waters, implementation of the strategy must ensure that wastewater discharges are managed in a way that protects designated bathing waters.

6.2.1.7. Wastewater Discharge Regulations

Under the Wastewater Discharge (Authorisation) Regulations 2007 (S.I. No. 684/2007) (as amended), all wastewater discharges from agglomerations require a licence or certificate of authorisation issued by the EPA. Licences specify pollutant limits such as biological oxygen demand (BOD), chemical oxygen demand (COD), nutrients, and microbiological contaminants. They also outline monitoring, reporting, and operational conditions to ensure ongoing compliance. Environmental regulation of public wastewater services is by the EPA who issue and enforce Uisce Éireann's wastewater discharge authorisations. As per the requirements of these regulations, the treatment plants and discharge points in the draft GWS Study Area must operate in compliance with environmental standards, driving monitoring, reporting, and necessary infrastructure upgrades.

6.2.2. Climate Change Related Plans and Policies

6.2.2.1. Climate Action and Low Carbon Development Act 2015 (as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021)

The Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021) establishes the following national climate objective:

"The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy." To achieve its objective, the Act requires several key actions. These include the preparation of an annual update to the Climate Action Plan (currently the Climate Action Plan 2025 is the most recent annual climate action plan), the development of a national long-term climate action strategy at least every five years, and the setting of five-year carbon budgets aligned with national climate targets. It also sets sectoral emissions ceilings to limit greenhouse gas emissions in different sectors, requires local authorities to prepare five-year Climate Action Plans outlining mitigation and adaptation measures, and obliges public bodies to consider these plans when carrying out their functions. The Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)) will significantly shape the investments outlined in the draft GWS, guiding its objective to identify sustainable wastewater management and treatment strategies and to develop a prioritised list of medium- and long-term solutions. The draft GWS will also seek to minimise the carbon impact of wastewater treatment by prioritising sustainable and effective management approaches. Ireland has a commitment to achieve net-zero emissions by 2050, and the water sector can support this by adopting low-carbon construction

methods, maximising energy efficiency and exploring opportunities for renewable energy generation within wastewater systems.

The Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021) shapes the draft GWS by requiring alignment with national climate targets, including reductions in greenhouse gas emissions and increased energy efficiency. It drives the transition toward low-carbon wastewater infrastructure and climate-resilient systems, supporting sustainable long-term service delivery.

6.2.2.2. Climate Action Plan 2025

The Climate Action Plan 2025 (CAP25)¹³⁵ is the third plan prepared under the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)) and sets out the latest assessment of progress and achievements over the past year, building on measures implemented in previous years. The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. The CAP25 sets out how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development. The draft GWS will set the context for subsequent implementation plans and projects that will detail the programmes of works to be completed in specific areas relevant to climate change adaptation and mitigation and wastewater compliance in accordance with the CAP25, and future updates versions of the climate action plan.

6.2.2.3. National Adaptation Framework and Sectoral Adaptation Planning

The National Adaptation Framework 2024 - Planning for a climate resilient Ireland¹³⁶ (NAF) sets out the national approach to adaptation in Ireland to reduce the negative impacts of climate change. The framework requires each government department to develop a sectoral adaptation plan for their area of responsibility. The 2024 NAF takes account of the changes and challenges and in particular the need for national climate change adaptation indicators and a national climate adaptation risk assessment. By promoting climate resilience and adaptive planning in response to risks such as flooding, sea level rise, and extreme weather, the NAF supports the draft GWS' development of robust wastewater infrastructure capable of maintaining service and protecting water quality under future climate conditions.

The **Water Quality and Water Services Infrastructure Climate Change Sectoral Adaptation Plan** has been prepared under the NAF¹³⁷. The draft GWS will be relevant to the implementing of

¹³⁵ Rialtas na hÉireann, 2025. Climate Action Plan 2025. Available at: [DECC Climate Action Plan 2025 Main Report - Final Web](#). Accessed February 2025.

¹³⁶ Department of the Environment, Climate and Communications (DECC).2024. National Adaptation Framework Planning for a Climate Resilient Ireland. Available at: [National Adaption Framework Panning for Climate Resilience](#) . Accessed: July 2024

¹³⁷ Department of Housing, Local Government and Heritage (DHLGH). 2019. Water Quality and Water Services Infrastructure – Climate Change Sectoral Adaptation Plan. Available from: [Water Quality and Water Services Infrastructure - Climate Change Sectoral Adaptation Plan](#). Accessed: July 2024

measures identified in the Adaptation Plan for Water Quality and Water Services Infrastructure and addressing the recommendations of the 2024 NAF.

6.2.2.4. Local Climate Adaptation Strategies

The Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)) requires all Local Authorities to provide a Climate Adaptation Strategy for their functional areas. The Galway County Climate Action Plan 2024 – 2029¹³⁸ and Galway City Climate Action Plan 2024 – 2029¹³⁹ have been developed under this Act. These plans establish an extreme weather event baseline and predict the challenges and risks that climate change will pose for the areas in the future. Climate Change Adaptation Strategies serve as the primary tool at the local level to identify and understand key climate risks and vulnerabilities. They guide the planned and proactive implementation of climate-resilient actions and ensure that climate adaptation considerations are integrated into all council operations and functions. These plans guide the draft GWS setting local climate mitigation and adaptation priorities. They inform wastewater infrastructure upgrades, energy efficiency measures, and flood resilience planning to ensure sustainable service delivery that aligns with Galway's climate goals.

6.2.3. Biodiversity Plans and Policies

6.2.3.1. 4th National Biodiversity Action Plan 2023-2030

The National Biodiversity Action Plan¹⁴⁰ (NBAP) has been developed in line with the EU and International Biodiversity strategies and policies. It strives for a “whole of government, whole of society” approach to the governance and conservation of biodiversity. The aim is to ensure that every citizen, community, business, local authority, semi-state and state agency has an awareness of biodiversity and its importance, and of the implications of its loss, while also understanding how they can act to address the biodiversity emergency as part of a renewed national effort to “act for nature”. The 4th NBAP set out a Vision for Biodiversity in 2050 where *‘Biodiversity in Ireland is valued, conserved, restored and sustainably used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people’*. The Plan’s targeted actions are underpinned by five strategic objectives which lay out a clear framework for Ireland’s national approach to biodiversity, ensuring that efforts and achievements of the past are built upon, while looking ahead to what can be achieved over the next five years and beyond. The objectives include:

- Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity
- Meet Urgent Conservation and Restoration Needs
- Secure Nature’s Contribution to People
- Enhance the Evidence Base for Action on Biodiversity

¹³⁸ Galway County Council, 2024. Local Authority Climate Action Plan 2024-2029. Available at: [Galway County Council Local Authority Climate Action Plan \(GCC LACAP\) 2024-2029](#). Accessed: January 2026.

¹³⁹ Galway City Council, 2024. Local Authority Climate Action Plan 2024-2029: Available at: [Climate Action Plan \(CAP\) 2024](#). Accessed: January 2026.

¹⁴⁰ Department of Housing, Local Government and Heritage (DHLGH). 2024. Ireland’s 4th National Biodiversity Action Plan 2023–2030. Available from: [Ireland’s 4th National Biodiversity Action Plan \(NBAP\)](#). Accessed: July 2024

- Strengthen Ireland's Contribution to International Biodiversity Initiatives

The draft GWS will need to take account of the objectives and actions under 4th NBAP, particularly those aimed at improving biodiversity and water quality including meeting urgent conservation and restoration needs (Objective 2) and linkage to meeting the third cycle RBMP objectives. The 4th NBAP places a strong focus on integrating biodiversity objectives across all sectors, including flood protection infrastructure. The plan highlights the importance of nature-based solutions, restoration of riparian and aquatic habitats, and active management of invasive alien species¹⁴¹.

6.2.3.2. EU's Nature Restoration Regulation

The EU Nature Restoration Regulation (2024/1991) is the first EU-wide, comprehensive law of its kind and is a key element of the EU Biodiversity Strategy for 2030 which sets binding targets to restore degraded ecosystems, in particular those with the most potential to capture and store carbon and to prevent and reduce the impact of natural disasters.

The Regulation aims to restore ecosystems, habitats and species across the EU to:

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

EU countries are expected to submit National Restoration Plans to the European Commission by September 2026, showing how they will deliver on the targets. They will also be required to monitor and report on their progress. The draft GWS and its SEA will need to address the requirements of the Nature Restoration Law as these are incorporated into national policy and regulations, potentially including through future updates to Uisce Éireann's Biodiversity Action Plan. The EU Nature Restoration Regulation influences the draft GWS by requiring the restoration and protection of ecosystems, including rivers, wetlands, and coastal areas affected by wastewater discharges. It drives the implementation of measures to reduce ecological impacts, improve water quality, and support biodiversity in Galway's catchments and marine environments.

6.2.3.3. Local Heritage and Biodiversity Plan

The Galway County Heritage and Biodiversity Plan¹⁴² sets out a clear framework to guide the awareness, protection, conservation, promotion, and management of Galway's heritage and biodiversity over the next six years and beyond. The Plan is built around three overarching objectives: to increase awareness, appreciation, and participation; to gather and share knowledge; and to manage and conserve our heritage, including biodiversity. The plan is consistent with the draft GWS as it promotes environmentally sensitive management of discharges, habitat

¹⁴¹ Department of Housing, Planning and Local Government (DHPLG). 2024. Ireland's 4th National Biodiversity Action Plan 2023-2030. Available at: [4th National Biodiversity Action Plan \(NBAP\)](#). Accessed January 2026.

¹⁴² Galway County Council, 2024. Galway County Heritage and Biodiversity Plan. Available at: [Galway County Heritage and Biodiversity Plan - Galway County Heritage Office](#). Accessed: June 2025.

conservation, and the safeguarding of rivers, wetlands, and other ecologically valuable areas across the county.

Galway City Biodiversity Action Plan 2025-2030 builds on the achievements of previous plans and reflects the urgency of the global biodiversity and climate crises, while also embracing the opportunities that come from working together across communities, sectors, and generations. It sets out actions to promote and conserve the city's natural heritage¹⁴³. The Plan aligns with the GWS as it promotes measures to reduce ecological impacts from discharges, restore habitats, and maintain healthy aquatic and riparian ecosystems within the city.

6.2.4. Circular Economy Plans and Policies

6.2.4.1. EU Soil Strategy and Soil Monitoring Law

The EU Soil Strategy for 2030¹⁴⁴ outlines the EU's commitment to fostering sustainable soil management practices, restoring degraded soils, and mobilising resources to achieve long-term soil health for the prosperity of future generations. Its medium-term objectives, to be achieved by 2030, include combating desertification, restoring degraded land and soils affected by drought, floods, or desertification, and striving for a land-degradation-neutral world. Significant areas of degraded and carbon-rich ecosystems, including soils, are to be restored. Its long-term objectives, looking towards 2050, aim to reduce soil pollution to levels no longer harmful to human health or natural ecosystems, respecting planetary boundaries and creating a toxic-free environment. The strategy also seeks to achieve a climate-neutral Europe, with the first step being land-based climate neutrality within the EU by 2035.

The soil monitoring law (Directive (EU) 2025/2360 of the European Parliament and of the Council of 12 November 2025 on soil monitoring and resilience) entered into force on 16 December 2025. The soil monitoring law aims to address key soil threats in the EU, such as erosion, loss of soil organic matter, salinisation, contamination, compaction and sealing, and loss of soil biodiversity. It provides a legal framework to help achieve healthy soils by 2050. EU Member States must transpose the Directive's provisions into their national law by December 2028, and Ireland has not yet enacted its national implementing measures. The draft GWS will need to consider how the proposed actions can support this strategy especially through sludge waste disposal and circular economy approaches.

6.2.4.2. Circular Economy and Miscellaneous Provisions Act 2022

Circular economy principles are the core ideas behind an economic system designed to reduce waste and keep resources in use for as long as possible. The Circular Economy and Miscellaneous Provisions Act 2022 (No. 26 of 2022) (as amended) establishes a legislative framework for Ireland's transition from a "take-make-waste" model toward a sustainable circular economy that prioritizes reuse, recycling, and resource efficiency. The Act demonstrates commitment to a more

¹⁴³ Galway City Council, 2025. Galway City Biodiversity Action Plan Available at: [Galway City Council Biodiversity Action Plan 2025-2030.pdf](#). Accessed January 2026.

¹⁴⁴ European Commission. EU Soil Strategy for 2030. Available at: [Soil Strategy for 2030 - Environment - European Commission](#). Accessed February 2026.

sustainable pattern of production and consumption, that retains the value of resources in the economy for as long as possible which will also significantly reduce greenhouse gas emissions. Ireland's National Waste Policy 2020-2025, called 'A Waste Action Plan for a Circular Economy'¹⁴⁵ sets out a roadmap that aims to ensure that Ireland not only meets the legal targets but also takes full advantage of the opportunities of the circular economy. The Circular Economy and Miscellaneous Provisions Act 2022 informs the draft GWS by promoting resource efficiency, waste reduction, and circular economy principles. It encourages the recovery and reuse of materials from wastewater, energy-efficient treatment processes, and sustainable management of sludge and by-products to reduce environmental impact.

6.2.5. Land Use and Planning

6.2.5.1. The Planning and Development Act 2024 and the Planning and Development Act 2000

Although the Planning and Development Act 2024 (No. 34 of 2024) (as amended) was signed into law on 17 October 2024 and is intended to repeal and replace the Planning and Development Act 2000 (No. 30 of 2000) (as amended), the two Acts currently coexist because the 2024 Act is being brought into force in stages. During this transitional period, many provisions of the 2000 Act remain in effect until corresponding sections of the 2024 Act are commenced by Ministerial Order, meaning that the older law continues to govern planning processes that have not yet been transitioned to the new legal framework. Once individual sections of the 2024 Act are commenced, the equivalent provisions in the 2000 Act are repealed, but ongoing planning processes started under the 2000 Act often continue to be dealt with under that Act. As a result, planning authorities, appellants, and developers must navigate a mixed legal landscape in which aspects of both the 2000 Act and the 2024 Act apply depending on the stage of commencement and the particular planning matter involved. The Acts will guide the integration of GWS wastewater infrastructure into regional and local planning. They ensure that new developments are supported by adequate wastewater capacity, align infrastructure projects with zoning and land-use policies, and promote sustainable urban growth while protecting water quality and the environment.

6.2.5.2. National Planning Framework – Project Ireland 2040

Project Ireland 2040 - The National Planning Framework¹⁴⁶ (NPF) is a strategic development framework that sets out the long-term context for Ireland's physical development and associated progress in economic, social, and environmental terms¹⁴⁷. Included in its strategic outcomes is the sustainable management of water, waste and other Environmental Resources. The NPF is being followed and underpinned by supporting policies and actions at sectoral, regional and local level. In the period to 2040, the NPF recognises Dublin as Ireland's key international and global city of scale and principal economic driver, accounting for 25% of growth. A further 25% of growth is

¹⁴⁵ DECC. 2020. A Waste Action Plan for a Circular Economy. Available from: [Waste Action Plan for a Circular Economy](#). Accessed: July 2024.

¹⁴⁶ Department of Housing, Planning and Local Government (DHPLG), 2018. Project Ireland 2040 - National Planning Framework. Available at: [Project Ireland 2040 NPF](#). Accessed: January 2026.

¹⁴⁷ Department of Housing, Planning and Local Government (DHPLG), 2018. Project Ireland 2040. National Planning Framework. Available at: [Project Ireland 2040 NPF](#). Accessed: January 2026.

estimated to occur across the other four cities combined (Cork, Limerick, Galway, and Waterford), enabling all four to become cities of greater scale by growing their population and jobs by 50-60%. The NPF plans for Galway growing by at least 50% by 2040 to become a city of scale. National Policy Objective 3b requires at least 50% of new homes in Galway City and suburbs to be delivered within the existing built-up area. Under the framework, three regional assemblies have been identified, Eastern and Midland, Northern and Western, and Southern. The study area falls within the Northern and Western region. The first revision to the NPF will take account of the Climate Action Plan 2023/2024, the National Marine Planning Framework from 2021, and the Planning and Development Act and the Planning and Development Act 2024 (No. 34 of 2024) (as amended).

Planning legislation provides for the Government to revise or replace the NPF every six years. Following a decision of Government in June 2023, the preparation of a revised National Planning Framework commenced and the First revision of the NPF was published in April 2025¹⁴⁸. The revised and updated NPS takes account of changes that have occurred since it was published in 2018.

The NPF promotes compact growth, infrastructure resilience, and sustainable land use through to 2040. Included in its strategic outcomes is the sustainable management of water, waste and other Environmental Resources. The NPF, along with regional and local plans, plays a critical role for the draft GWS by setting out projected population growth, economic expansion, and housing development—all of which must be effectively supported by wastewater infrastructure. At the same time, the draft GWS has an important opportunity to help inform and influence these plans, ensuring that future growth is aligned with sustainable development principles and supported by appropriate wastewater capacity and environmental safeguards.

6.2.5.3. National Development Plan 2021-2030

As part of NPF - Project Ireland 2040, the National Development Plan (NDP)¹⁴⁹ sets out the Government's over-arching investment strategy and budget for the period 2021-2030. The NDP is an ambitious plan that balances the significant demand for public investment across all sectors and regions of Ireland with a major focus on improving the delivery of infrastructure projects to ensure speed of delivery and value for money. The current NDP is identified as being 'the largest and greenest ever delivered in Ireland', with a particular focus on supporting the largest public housing programme in the history of the state. While many of the investments in this NDP are already well known and have been progressing through planning for some time, there are a range of investments which are new or enhanced in this NDP. The draft GWS will need to take account of population and economic growth and the related requirements for wastewater services.

6.2.5.4. Regional Spatial and Economic Strategy (RSES) for the Northern & Western Region of Ireland

The Northern & Western Regional Assembly is responsible for the preparation and implementation of the Regional Spatial and Economic Strategy (RSES) for the Northern & Western

¹⁴⁸ Rialtas na hÉireann, 2025. Project Ireland 2040 - National Planning Framework First Revision. Available at: [National-Planning-Framework-First-Revision-April-2025-1.pdf](#). Accessed March 2026.

¹⁴⁹ Department of Public Expenditure, NDP Delivery and Reform. 2021. National Development Plan 2021-2030. Available from: [National Development Plan 2021 - 2030](#). Accessed: July 2024.

Region of Ireland. The RSES¹⁵⁰ is a twelve-year strategic planning and investment framework for the region, with a primary aim to implement NPF - Project Ireland 2040 at the regional tier of Government and to support the achievement of balanced regional development. The strategy focuses on the delivery of housing, job creation, infrastructure, community facilities and ensuring that the region remains attractive for investment. All City and County Development Plans—and any changes to them—must align with the Regional Spatial and Economic Strategy (RSES) and relevant national policies. Before being adopted, any draft development plan or proposed variation must be submitted by the relevant local authority to the Regional Assembly for review. The Regional Assembly considers the consistency of the draft with the RSES and can make formal recommendations to the local authority on what amendments, are required to ensure consistency of the proposed variation to the development plan and its core strategy with the RSES. The RSES for the Northern and Western Region discusses the sustainable management of water, waste and other environmental resources and how these will contribute to improved water quality – all of which are integral to the draft GWS¹⁵¹.

6.2.5.5. Local Development Plans / Other Local Strategic Plans

The NPF includes a national planning objective NPO 67 to prepare a Metropolitan Area Strategic Plan (MASP) for Galway through the Regional Spatial and Economic Strategy (RSES) process. The **Galway Metropolitan Area Strategic Plan (MASP)**¹⁵² forms part of the Regional Spatial and Economic Strategy (RSES). The MASP sets out the strategic direction for the Galway Metropolitan Area to achieve compact growth, the first National Strategic Outcome (NSO) of the National Planning Framework. It establishes a clear strategy to identify key change parameters for the area, including population, employment, housing, retail, travel patterns, and priority renewal, development and amenity areas. It also provides a framework for the sequencing, prioritisation, delivery and coordination of infrastructure, to support compact regeneration and sustainable growth. The Galway Metropolitan Area Strategic Plan, and as set out in Chapter 1 of the Galway County Development Plan, and under NPO 9 of the NPF, recognises the pivotal importance of infrastructure to be prioritised within the Galway Metropolitan Area as a means to retain and build on the attractiveness of the area as a place in which to live and work. A key Growth Enabler for Galway as identified in the NPF relates to the delivery of the Greater Galway Area Drainage Study (GWS). The MASP has a goal to deliver at least 50% of all new homes within the existing built-up footprint of Galway City and suburbs. This approach aligns with compact urban growth. The plan further identifies Garraun and Briarhill as key strategic growth areas. The MASP serves as a guide for local authorities, planners, and developers and helps us understand where demand is likely to increase. The MASP and draft GWS will align by coordinating wastewater

¹⁵⁰Northern and Western Regional Assembly. 2020 Regional Spatial and Economic Strategy 2020-2032 (RSES). Available at: [RSES for Northern & Western Region - Northern & Western Regional Assembly](#). Accessed January 2026.

¹⁵¹ Northern and Western Regional Assembly (NWRA). 2020. Regional Spatial and Economic Strategy 2020-2032 (RSES). Available at: [RSES for Northern & Western Region - Northern & Western Regional Assembly](#). Accessed: January 2026.

¹⁵² Galway County Council. 2022. The Galway Metropolitan Area Strategic Plan (MASP). Available at: [Metropolitan Area Strategic Plan - MASP Settlements](#). Accessed: February 2026.

infrastructure with projected urban growth, transport, and land-use planning within the metropolitan area.

The **Galway County Development Plan 2022-2028**¹⁵³ outlines how the Galway Metropolitan Area will be the driver of sustainable growth in the Northern and Western Region, providing a choice of housing typologies together with excellent public transport, employment, community, leisure and amenity facilities in a healthy environment that will attract the critical mass of population needed to support the establishment of strong local communities and ensure a strong local and regional economy. The Plan serves as the statutory blueprint guiding sustainable growth and development across County Galway, excluding the Galway City area. The plan sets out strategic objectives covering housing, infrastructure, economic development, and environmental sustainability to manage projected population growth and evolving community needs. A key focus of the plan is housing delivery to accommodate population growth through a settlement hierarchy that encourages compact urban development within the Galway Metropolitan Area Strategic Plan (MASP) and supports rural communities. The plan supports economic growth by leveraging the role of strategic towns like Ballinasloe, Tuam, and Athenry as hubs for employment and services. Tourism development, especially eco-tourism and heritage-based initiatives in towns like Gort, is also highlighted as an economic driver. Environmental sustainability is embedded within the plan and include the creation of green infrastructure. Projects such as the Gort Ecopark exemplify the focus on transforming former industrial sites into sustainable, biodiversity-rich community spaces. The draft GWS supports the Galway County Development Plan by ensuring that wastewater services support sustainable development, protect water quality, and address environmental and community needs throughout Galway County.

The **Galway City Development Plan 2023-2029**¹⁵⁴ is set within the overall national and regional planning contexts and takes into account the NPF, the RSES and the Galway MASP. It sets out the policies and objectives for the development of the City over the plan period. The plan is designed to guide Galway City's growth and development over the next six years. It aims to balance urban expansion with environmental sustainability, economic vitality, and community well-being, ensuring Galway develops as a resilient and inclusive city. The plan sets ambitious housing targets in addition to providing commercial office space to support Galway's expanding economy. It includes measures to enhance green spaces and biodiversity throughout the city. The Galway City Development Plan is supported by detailed zoning maps, environmental assessments, and strategic infrastructure plans. The draft GWS supports the Galway City Development Plan by ensuring that wastewater services can accommodate urban growth while protecting water quality, supporting sustainable development, and safeguarding public health within Galway City.

The **Galway County Local Economic and Community Framework Plan 2024 -2030**¹⁵⁵ (LECP) is a six-year plan setting out objectives and actions needed in County Galway to promote and support local and community, as well as economic, development. The LECP acts as the primary mechanism at the local level to bring forward relevant actions arising from national and regional

¹⁵³ Galway County Council (GCC). 2022. Galway County Development Plan 2022 – 2028: Available at: [Adopted Galway County Development Plan 2022-2028](#). Accessed January 2026.

¹⁵⁴ Galway County Council (GCC). 2022. Galway City Development Plan 2023-2029. Available at: [Galway City Development Plan 2023-2029](#). Accessed January 2026.

¹⁵⁵ Galway County Council (GCC). 2022. Galway Local Economic and Community Framework Plan 2024 -2030. Available at: [Local Economic and Community Plan \(LECP\) 2024-2030](#). Accessed February 2026.

strategies and policies that have a local remit. The Plan supports the draft GWS by linking wastewater infrastructure planning with local economic growth, community development, and population needs. It ensures that wastewater services enable sustainable development, support business and residential expansion, and maintain environmental and public health standards across Galway County.

The **Galway Docks Expansion Project**¹⁵⁶ plans to reclaim 23.89 ha of land as quays and back-up land available for industries. The project will include a marina with 216 berths, as well as a naval wharf, fishing pier, and slipway. The Galway docks will be extended 935m out to sea, providing 660m of quay berth. The extension of the docks or changes to the channels in the bay, will have an impact on the water flows and subsequently our marine modelling. The draft GWS will need to consider the impact of the extension and any potential impacts on how and where planned discharge locations fall.

The **South Park and Public Realm Project**¹⁵⁷ is a Galway city council initiative to redevelop and revitalise the South Park area and surrounding public spaces, including the Claddagh Basin, Mutton Island Causeway, and Celia Griffin Park. Given the project's proximity to critical wastewater infrastructure, careful planning and alignment is required to optimise land use, enhance flood resilience, and safeguard environmental quality. This integrated approach will support both the functional objectives of the GWS and the South Park Public Realm Project.

The **Galway City Ring Road** (GCRR)¹⁵⁸ is a proposed 18-kilometre transport infrastructure project aimed at alleviating chronic traffic congestion in Galway City. Integrated planning between the GCRR and GWS is essential so that opportunities are taken to integrate and mitigate potential conflicts between infrastructure systems, but also to ensure that both projects contribute to Galway's long-term resilience, environmental protection, and strategic land use planning. On 7 April 2026, An Coimisiún Pleanála approved (with conditions and modifications) the N6 Galway City Ring Road

6.3 Uisce Éireann Plans

The Uisce Éireann (UÉ) plans and programmes most relevant to the draft GWS are outlined below.

6.3.1.1. Sustainable Energy – Climate Change Mitigation and Adaptation

UÉ's Sustainability Framework outlines the company's approach to embedding sustainability across its water and wastewater services. It is built on four pillars — Environment, Social, Collaboration, and Governance — and defines six key ambitions, including achieving net zero carbon by 2040, delivering biodiversity net gain by 2030, reaching sustainable leakage levels, enhancing inclusion and equality, educating communities about water value, and incorporating

¹⁵⁶ Port of Galway. Galway Harbour Redevelopment. Available at: [Port of Galway Redevelopment | Port of Galway](#). Accessed March 2026.

¹⁵⁷ Galway City Council. South Park and Public realm project. Available at: [South Park and Public Urban Realm Project Public Consultation Event | Galway City Council](#). Accessed March 2026.

¹⁵⁸ [N6 Galway City Ring Road](#). Accessed March 2026.

circular economy solutions in all capital projects. The framework aims to integrate sustainability into decision-making and guide the organisation's long-term environmental and social performance¹⁵⁹. Improving energy efficiency is a key sustainability priority for UÉ. By reducing energy use, the organisation lowers its carbon footprint and greenhouse gas emissions, helping to build climate-resilient water and wastewater services and transition to a low-carbon operation. UÉ has recently (2026) been awarded ISO 50001 certification, which represents the international benchmark for excellence in energy management. This certification highlights its ongoing commitment to improving energy efficiency and reducing environmental impact across Ireland's national water services¹⁶⁰. UÉ's Sustainability Framework underpins the draft GWS by providing guiding principles for environmental stewardship, resource efficiency, and climate resilience.

6.3.1.2. Biodiversity Action Plan

UÉ's Biodiversity Action Plan (BAP)¹⁶¹ details specific objectives and actions to protect biodiversity, which is a key part of UÉ's Biodiversity and Sustainability Policies. The overarching aim of UÉ's Biodiversity Policy is: *'In association with the provision of water and wastewater services, biodiversity and the natural environment are conserved, protected and where practical enhanced, through our responsible stewardship, sustainable water services and strong partnerships'*. UÉ aims to protect and enhance biodiversity across its sites by implementing clear biodiversity measures and delivering staff education and awareness programmes. UÉ's BAP has recently been revised and now has an objective for all infrastructure projects to achieve Biodiversity Net Gain. UÉ will apply the All-Ireland Pollinator Plan, promote nature-based solutions for water and wastewater services, manage invasive species, and collaborate with stakeholders and communities to support biodiversity protection. The GWS will align with UÉ's Biodiversity Action Plan, ensuring that biodiversity is valued across the life of the GWS.

6.3.1.3. National Wastewater Sludge Management Plan

The 2016 National Wastewater Sludge Management Plan (NWSMP)¹⁶² sets out a long-term nationwide strategy to deliver a sustainable and standardised approach to managing wastewater sludge. UÉ estimates wastewater sludge will increase by over 80% by 2040 as new and upgraded treatment plants come online, creating economic, planning, and environmental challenges. The NWSMP sets out a national approach to ensure treated sludge is sustainably managed, stored, transported, reused, or disposed of for the benefit of the public and the environment. UÉ is currently updating the Plan, which will be called the National Bioresources Strategy¹⁶³. The revision will report on progress since 2016 and outline how sludge management supports climate action, sustainability, and circular economy objectives. The NWSMP informs the draft GWS by setting out best practices for the treatment, disposal, and recovery of wastewater sludge.

¹⁵⁹ Uisce Éireann (UÉ). Sustainability Framework. Available at: [Sustainability Framework](#). Accessed February 2026.

¹⁶⁰ Uisce Éireann (UÉ). 2026. Uisce Éireann officially awarded ISO 50001 certification. Available at: [UÉ officially awarded ISO 50001 certification](#). Accessed: February 2026.

¹⁶¹ Uisce Éireann (UÉ). 2021. Uisce Éireann Biodiversity Action Plan. Available at: [Biodiversity Action Plan \(BAP\)](#). Accessed: July 2024.

¹⁶² Uisce Éireann (UÉ). 2016. National Wastewater Sludge Management Plan. Available at: [National Wastewater Sludge Management Plan \(NWSMP\)](#). Accessed: January 2026

¹⁶³ The National Bioresources Strategy will replace the National Wastewater Sludge Management Plan. [Draft NBS UÉ presentation](#)

6.3.1.4. Water Services Policy Statement

The Water Services Policy Statement 2024-2030 (WSPS) provides the framework within which UÉ's funding and investment plans are agreed. It sets out the priorities of Government regarding the provision of water services during the period of the Strategic Funding Plan¹⁶⁴. The WSPS guides the draft GWS by setting national priorities for investment, regulation, and sustainable management of water and wastewater services.

6.3.1.5. Water Services Strategic Plan

The Water Services Strategic Plan 2050 (WSSP)¹⁶⁵ is UÉ's long-term strategic plan which is required to be prepared under the Water Services No. 2 Act 2013. It sets out UÉ's objectives, strategic direction, and the actions that UÉ aim to implement to ensure sustainable public water services for Ireland the next 25 years. The WSSP informs the draft GWS by providing a long-term vision for resilient, sustainable, and climate-adaptive wastewater infrastructure.

6.3.1.6. Strategic Funding Plan

The Strategic Funding Plan 2025-2029 (SFP)¹⁶⁶, underpinned by a Capital Investment Plan, outlines the opportunities for UÉ to make necessary, multi-generational improvements to water and wastewater infrastructure. The SFP supports the draft GWS by outlining funding priorities for wastewater infrastructure upgrades, maintenance, and climate-resilient projects. It ensures that Galway's wastewater services have the financial resources needed to meet regulatory requirements, environmental standards, and future population growth.

¹⁶⁴ Department of Housing, Planning and Local Government (DHPLG). 2024. Water Services Policy Statement 2024-2030. Available at: [Water Services Policy Statement 2024 - 2030](#). Accessed: January 2026.

¹⁶⁵ Uisce Éireann, 2025. Water Services Strategic Plan 2050. Available at: [Water Services Strategic Plan \(WSSP\) 2050](#). Accessed: January 2026.

¹⁶⁶ Uisce Éireann (UÉ). 2024. Uisce Éireann Strategic Funding Plan 2025-2029. Available at: [Uisce Éireann Strategic Funding Plan 2025 - 2029](#). Accessed: January 2026.

7. SEA Assessment Methodology

7.1 Introduction

This Section sets out the proposed SEA methodology and how the development of the draft GWS was influenced through the SEA process. This assessment has been undertaken in accordance with Schedule 2, Part (f) of the SEA Directive and Schedule 2B of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 S.I. No. 435/2004 (as amended by 2011 S.I. No. 200/2011). Key guidance considered in the approach to the SEA includes:

- SEA pack including scoping guidance and checklists (updated 2023)¹⁶⁷
- Developing and Assessing Alternatives in SEA¹⁶⁸
- Guidance on SEA Statements and Monitoring¹⁶⁹
- Integrating Climatic Factors into SEA in Ireland – A Guidance Note¹⁷⁰
- Good practice guidance on Cumulative Effects Assessment in SEA¹⁷¹
- EPA guidance 'The Tiering of Environmental Assessment – The influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment (EIA)'¹⁷²
- Good Practice Guidance Strategic Environmental Assessment in the Water Sector¹⁷³
- European Commission Guidance on implementation of the SEA Directive to assess the effects of certain plans and programmes on the environment¹⁷⁴
- Strategic Environmental Assessment: Guidelines for Regional Assemblies and Planning Authorities¹⁷⁵

Other EPA SEA Topic and Sector Specific Guidance¹⁷⁶ relevant to the development to the draft GWS have also been used to guide and influence the SEA process.

¹⁶⁷ EPA, 2023 SEA Pack. Available from [SEA Pack 2024 - EPA](#). Accessed: July 2024

¹⁶⁸ EPA. 2015. Developing and Assessing Alternatives in Strategic Environmental Assessment (SEA). Available from: [Review of Effectiveness of SEA in Ireland](#). Accessed: July 2024

¹⁶⁹ EPA, 2020. Guidance on SEA Statements and Monitoring. Available from: [Review of Effectiveness of SEA in Ireland - Executive Summary | Environmental Protection Agency \(epa.ie\)](#). Accessed: July 2024

¹⁷⁰ EPA, 2019. Integrating Climatic Factors into Strategic Environmental Assessment in Ireland - A Guidance Note. Available from: [EPA SEA Climate Factors Guidance Notes](#). Accessed: July 2024.

¹⁷¹ Environmental Protection Agency (EPA). 2020. Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment. Available at: [EPA Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment](#). Accessed: January 2026.

¹⁷² Del Campo, A.G., Thérivel, R., & Malepe, K. 2021. The Tiering of Environmental Assessment – The influence of Strategic Environmental Assessment on Project-level. Environmental Protection Agency (EPA)- Research Report. Available at: [EPA Research Report 391](#). Accessed: March 2026.

¹⁷³ Environmental Protection Agency (EPA). 2022. Good Practice Guidance Strategic Environmental Assessment in the Water Sector. Available at: [SEA Screening Good Practice Water 2022](#) Accessed: July 2024.

¹⁷⁴ European Commission. 2003. Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programme on the environment. Available at: [SEA Guidance](#). Accessed: February 2026.

¹⁷⁵ Department of Housing, Local Government, and Heritage, 2022. Strategic Environmental Assessment: Guidelines for Regional Assemblies and Planning Authorities. Available at: [strategic-environmental-assessment-guidelines-for-regional-assemblies-and-planning-aut.pdf](#). Accessed February 2026.

¹⁷⁶ Environmental Protection Agency (EPA). 2026. SEA Topic and Sector Specific Guidance. Available at: [SEA Topic and Sector-Specific Guidance](#). Accessed: February 2026.

7.2 Strategic Environmental Objectives

During the scoping stage of the SEA process, a set of Strategic Environmental Objectives (SEOs) and assessment criteria have been developed based on the key considerations from the Environmental baseline review (**Section 4**) and the policy, plan and programme review (**Section 5**). These objectives provide the framework for assessing the alternative plan approaches and preferred plan proposals. The SEOs and assessment criteria are provided in **Table 7-1**. These high-level SEOs provide the framework for assessing the potential for significant effects arising from the draft GWS, both in comparison with the 'Do-Nothing' scenario and across each wastewater strategy option during the construction and operational phases. The assessment also considers the potential for mitigation during plan implementation and across the different option types.

Table 7-1 Strategic Environmental Objectives (SEOs) for Draft GWS Assessment

SEA Topic	SEA Objective (SEO)
Water Environment (W1)	<p><u>Water quality</u></p> <ul style="list-style-type: none"> Contribute towards the 'no deterioration' in WFD (2000/60/EC) Status requirement and restore and improve waterbody status within the GWS Study Area to meet WFD and RBMP objectives related to the provision of wastewater services. Minimise flood risk by separating foul and surface water flows and incorporating nature-based solutions such as sustainable drainage systems and wetlands.
Population, Economy, Tourism and Recreation, and Human Health (P1)	<ul style="list-style-type: none"> Protect and contribute to enhancement of human health and wellbeing and support sustainable economic and population growth Prevent restrictions to recreation and amenity facilities, and improve the facilities, where possible Protect and enhance freshwater and marine fisheries, and designated shellfish areas
Climate Change (C1)	<p><u>Climate Change Mitigation</u></p> <ul style="list-style-type: none"> Reduce greenhouse gas and other air emissions from wastewater services by improving energy efficiency, promoting water conservation and reuse, and incorporating ecosystem services such as carbon sequestration into planning and operations. <u>Climate Change Adaptation</u> Strengthen the resilience of wastewater services and

SEA Topic	SEA Objective (SEO)
	<p>infrastructure to climate change by anticipating environmental and operational pressures and implementing adaptive measures. Consider extreme weather events throughout project lifecycle.</p>
Biodiversity (B1)	<ul style="list-style-type: none"> • Protect and enhance terrestrial and aquatic biodiversity, and habitat connectivity, with particular regard for designated European sites and nationally protected habitats and species. • Achieve Uisce Éireann’s Biodiversity Action Plan commitments, with particular emphasis on construction and wastewater services.
Material Assets (M1)	<p><u>Resource use and waste management</u></p> <ul style="list-style-type: none"> • Minimise resource use and waste generation from wastewater infrastructure, including sludge and treatment residuals. • Apply circular economy principles across lifecycle decision making. <p><u>Asset use</u></p> <ul style="list-style-type: none"> • Minimise impacts on surrounding material assets and infrastructure. • Optimise the use of existing wastewater assets through effective capacity management and targeted upgrades to existing treatment facilities.
Landscape, Townscape and Seascape (L1)	<ul style="list-style-type: none"> • Protect and enhance designated and valued landscapes, townscapes, seascapes, and visual amenity in the planning and delivery of wastewater services.
Cultural Heritage – Archaeological and Architectural (H1)	<ul style="list-style-type: none"> • Protect designated cultural heritage assets, architectural sites, and archaeological sites. • Record, add to, and improve knowledge, documentation, and public access to cultural, architectural, and archaeological heritage.
Geology and Soils (G1)	<ul style="list-style-type: none"> • Protect geology and soils in the GWS Study Area. • Contribute towards the appropriate management of soil quality and quantity related to wastewater services.

SEA Topic	SEA Objective (SEO)
Air Quality (A1)	<ul style="list-style-type: none"> Identify and seek to apply wastewater treatment improvements, higher design standards and operation practices to minimise odour from wastewater plants. Apply best practice construction methodology to ensure there is no impact to air quality during construction.
Noise and Vibration (N1)	<ul style="list-style-type: none"> The challenges and opportunities related to noise and vibration are considered localised issues to be addressed through the application of appropriate standards at programme and project levels. Noise and Vibration has been scoped out of further assessment.

7.3 Consideration of Alternatives

The SEA Directive requires the SEA process to identify and describe ‘reasonable alternative’ means of achieving the objectives of a plan. It states under Article 5(1) that: *“Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated”*. Annex I (h) of the SEA Directive requires an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information. As per EPA guidance, alternatives are defined as different ways to deliver a plan’s (or programme’s) objectives while addressing environmental issues identified during scoping¹⁷⁷.

Consideration of alternatives in SEA provides the opportunity to identify and explore different ways to deliver the objectives of a plan while addressing environmental issues and identifying if any adverse effects of the proposed plan can be reduced or avoided. Therefore, the alternatives should be “reasonable”. The term reasonable is not defined in the SEA Directive. However, taking EPA guidance into account, an alternative can only be considered reasonable for the purposes of this SEA if it meets the objectives of the draft GWS. These objectives are to develop a sustainable wastewater drainage strategy for the draft GWS study area that is consistent with the requirements of the WFD, rUWWTD, and UWWTD. The alternative must also be capable of meeting the growth demands of the study area, having regard to current Development Plans, the National Planning Framework, the RSES 2020 – 2032 for the Northern and Western Region and the longer-term development potential of the area up to 2080.

¹⁷⁷ González, A., Therivel, R., Fry, J., & Foley, W. 2015. Developing and Assessing Alternatives in Strategic Environmental Assessment. EPA Research Report. Available at: [SEA-Alternatives EPA Research Report No. 157](#). Accessed: January 2026.

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

The assessment of the draft GWS includes:

- Development of a long list of interventions
- Grouping and comparison of interventions (TOTEX Hierarchy)
- Coarse screening (agglomeration level) of interventions to produce a list of options
- Fine screening of options
- Overarching comparative assessment of the proposed draft GWS compared to a no GWS 'Do-Nothing' scenario
- Final assessment of options so that preferred options are identified
- Assessment of inter- and intra- cumulative impacts of the draft GWS
- Identification of mitigation measures and recommended actions and monitoring requirements for the GWS implementation

As the options assessment applies the TOTEX hierarchy to a long list of interventions during coarse screening and evaluates nine options during fine screening, it effectively addresses the requirement to consider reasonable alternatives.

Interventions have been assessed through the TOTEX hierarchy (**Figure 7-1**) during coarse screening. During fine screening, nine options have been evaluated, identifying the potential for significant effects against SEA Topics and their Strategic Environmental Objectives (SEOs), as per **Table 7-1**. During fine screening, the effects have been assessed as beneficial, adverse, or neutral, and the strength of these effects have been indicated by colour and number, as shown in **Table 7-2**. The assessment of the effects that are expected to occur from the implementation of the draft GWS is based on the sensitivity of the receptor and the scale of the change. Using this method, a sensitive receptor (for example a European designated site) may only require a small change to be considered as a significant effect. Alternatively, a less sensitive environment may tolerate a larger change and may therefore be judged as a minor or no effect. The assessment is made taking planning procedures, legislative protection, and standard mitigation measures into account.

The magnitude of the predicted effect has been assessed by considering the likelihood of its occurrence, its severity, and its spatial extent (i.e. the size of the area or population affected). A description of the nature of these effects has also been provided (see SEA Environmental Report **Appendix B**), including whether they are cumulative, direct or indirect, short- or long-term, and whether they are negative, positive, mixed, or neutral.

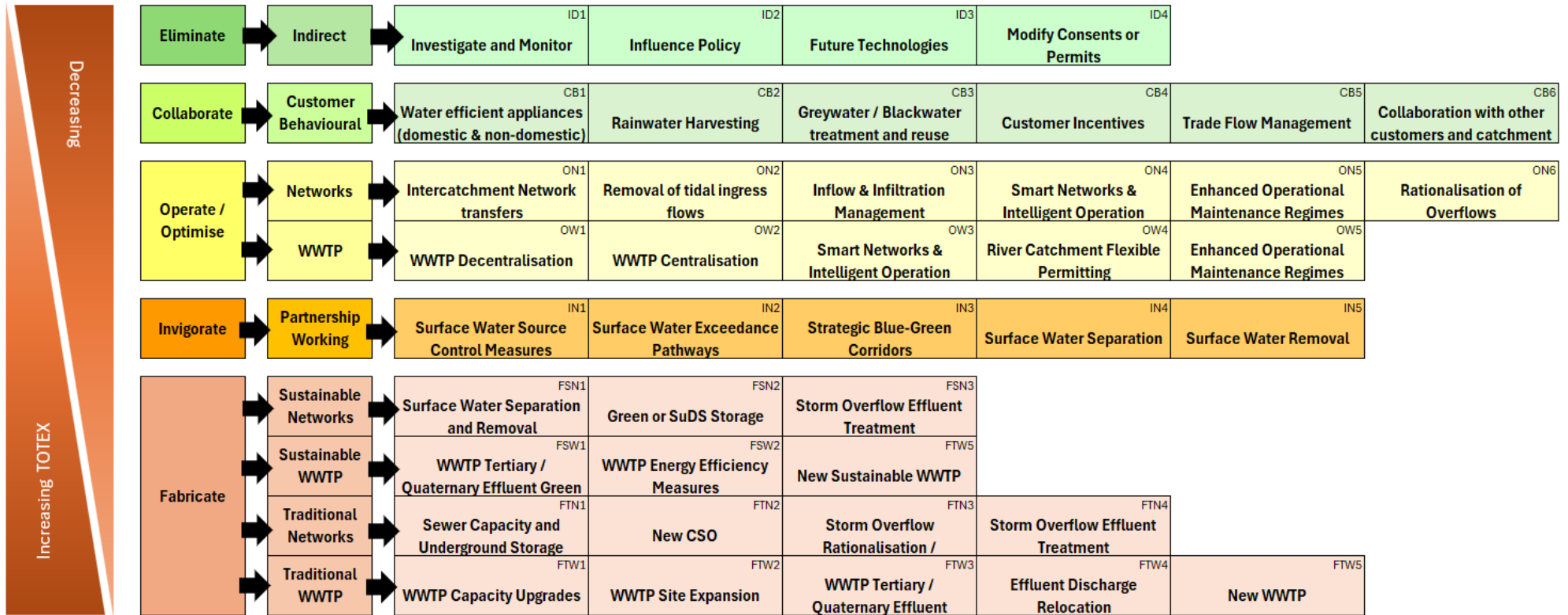


Figure 7-1: TOTEX hierarchy used for coarse screening of the draft GWS. The TOTEX hierarchy structures interventions by whole life cost, from lowest cost to greatest. The first layer of options represents the least costly. For example, 'Eliminate' focuses on removing the root cause, so that investment is not required. 'Collaborate' involves working with external stakeholders to share responsibility for issues or to potentially co-fund interventions. The interventions under 'Operate' focus extracting more value from current infrastructure through better maintenance, monitoring, and process control. Interventions under 'Invigorate' target investment in existing infrastructure to improve its performance and resilience. 'Fabricate' represents the development of new assets to augment or replace existing systems. 'Fabricate' options generally carry the highest capital costs but offer the most assured delivery of service-related benefits. Within this category, a range of types of options were considered, including blue-green infrastructure and innovative solutions alongside traditional grey infrastructure.

Table 7-2: Assessment criteria for fine screening of the draft GWS

Major Positive/ Beneficial	Moderate Positive/ Beneficial	Minor Positive/ Beneficial	Neutral/Negligible Risk	Minor Risk	Moderate Adverse Risk	Major Adverse Risk
7	6	5	4	3	2	1
Plan approach / alternative is likely to make a considerable positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects.	Plan approach / alternative is likely to make a moderate positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects	Plan approach / alternative has potential to provide a minor positive contribution to SEOs or improve likelihood of delivery of positive effects and reduce risk of adverse effects.	Plan approach / alternative has negligible of contribution or conflict with SEOs or low risk of effects or uncertainty of effects.	Plan approach / alternative has minor potential to conflict to a greater extent with SEOs or increase risk of adverse effects.	Plan approach / alternative has moderate potential to conflict to a greater extent with SEOs or increase risk of adverse effects.	Plan approach / alternative has potential to conflict to a greater extent with SEOs or high risk of significant adverse effects.

7.4 Cumulative Effects Assessment

Article 3(5) of the SEA Directive states that it should be determined “*whether plans or programmes ... are likely to have significant environmental effects*”. Annex II (2) details the criteria for determining the likely significance of effects referred to in Article 3(5), including the need to take into consideration “*the cumulative nature of the effects*”. Cumulative effects result from a combination of two or more individual effects on a receptor. Such effects can occur as a result of plans, programmes, projects and other actions in the past, present and the reasonably foreseeable future. They can result from impacts that may be individually insignificant, but collectively significant.

Both intra-plan and inter-plan cumulative effects have been considered within this SEA:

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

Table 7-3 outlines how cumulative effects between the draft GWS and other plans and programmes (Inter-Plan cumulative effects) will be assessed.

Table 7-3: Cumulative Effects Assessment

Key		No interaction or negligible cumulative effects	-	Potential for negative cumulative effects
	+	Potential for beneficial cumulative effects	+/-	Potential for mixed beneficial and negative effects

The plans included as part of the inter-plan cumulative assessment are listed below:

- Regional Water Resources Plan – North West (UÉ, 2023)¹⁷⁸
- Water Services Strategic Plan 2050 (UÉ, 2024)¹⁷⁹
- National Wastewater Sludge Management plan (UÉ,2016)¹⁸⁰

¹⁷⁸ Uisce Éireann, Regional Water Resources Plan - North West (2023). Available at: [Regional Water Resources Plan - North West | Strategic Plans | Uisce Éireann \(formerly Irish Water\)](#) Accessed: March 2026

¹⁷⁹ Uisce Éireann, Water Services Strategic Plan 2050 (2024). Available at: [Water-Services-Strategic-Plan-2050.pdf](#) Accessed: March 2026

¹⁸⁰ Uisce Éireann, National Wastewater Sludge Management Plan. Available at [Wastewater Sludge Management Plan | Projects | Uisce Éireann \(formerly Irish Water\)](#) Accessed: March 2026

- Uisce Éireann Biodiversity Action Plan (UÉ, 2021)¹⁸¹
- Climate Action Plan 2025¹⁸²
- National Adaptation Framework 2024¹⁸³
- Water Quality and Water Services Infrastructure Sectoral Adaptation Plan 2025¹⁸⁴
- Water Action Plan 2024¹⁸⁵
- National Planning Framework First Revision - Project Ireland 2040¹⁸⁶
- Project Ireland 2040 - National Marine Planning Framework¹⁸⁷
- Ireland's 4th National Biodiversity Action Plan 2023-2030¹⁸⁸
- National Development Plan Review 2025¹⁸⁹
- Water Services Policy Statement (WSPS) 2024-2030¹⁹⁰
- Healthy Counties and Cities (2023)¹⁹¹
- Our Rural Future: Rural Development Policy 2021-2025¹⁹²
- National Waste Management Plan for a Circular Economy - Ireland's National Waste Policy 2024-2030¹⁹³
- Whole of Government Circular Economy Strategy 2026-2028: Accelerating Action (2026)¹⁹⁴
- Heritage Ireland 2030¹⁹⁵
- Regional Spatial and Economic Strategy (RSES) for the Northern & Western Region of Ireland¹⁹⁶
- Wild Atlantic Way Regional Tourism Development Strategy 2023-2027¹⁹⁷

¹⁸¹ Uisce Éireann Biodiversity Action Plan (UÉ, 2021). Available at [Biodiversity Action Plan | National Projects | Uisce Éireann \(formerly Irish Water\)](#) Accessed: March 2026

¹⁸² Rialtas na hÉireann. 2025. Climate Action Plan 2025. Available at: [DECC Climate Action Plan 2025 Main Report](#). Accessed: February 2025.

¹⁸³ Department of the Environment, Climate and Communications (DECC). 2024. National Adaptation Framework – Planning for a Climate Resilient Ireland. Available at: [NAF - Planning for Resilient Ireland](#). Accessed: July 2024

¹⁸⁴ Department of Housing, Local Government and Heritage (DHLGH). 2025. Water Quality and Water Services Infrastructure Sectoral Adaptation Plan 2025. Available at: [Annex 8 - Water Services and Water Quality](#). Accessed: January 2026.

¹⁸⁵ Department of Housing, Local Government, and Heritage (DHLGH). 2024. Water Action Plan 2024. Available at: [Water Action Plan 2024 \(WAP24\)](#). Accessed: January 2026

¹⁸⁶ Department of Housing, Planning and Local Government (DHPLG). 2018. Project Ireland 2040 – National Planning Framework. First Revision Available at: [National-Planning-Framework-First-Revision-April-2025-1.pdf](#) Accessed: January 2026

¹⁸⁷ Department of Climate, Energy and the Environment (DCEE). 2025. National Marine Planning Framework. Available at: [National Marine Planning Framework \(NMPF\)](#). Accessed: July 2024.

¹⁸⁸ Department of Housing, Local Government and Heritage (DHLGH). 2024. Ireland's 4th National Biodiversity Action Plan 2023–2030. Available from: <https://www.gov.ie/en/publication/93973-irelands-4th-national-biodiversity-action-plan-20232030/>. Accessed: July 2024.

¹⁸⁹ Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation. 2021. National Development Plan Review 2025. Available from: [NDP Review document - updated in use.pdf](#) Accessed: March 2026

¹⁹⁰ Department of Housing, Local Government and Heritage (DHLGH). 2024. Water Services Policy Statement 2024-2030. Available at: [Water Services Policy Statement 2024 - 2030](#). Accessed: March 2026.

¹⁹¹ Healthy Ireland; Department of Health, 2023, Healthy Counties and Cities, Available at [Healthy Counties and Cities](#), Accessed: March 2026.

¹⁹² Department of Rural and Community Development and the Gaeltacht, 2021, Our Rural Future: Rural Development Policy 2021-2025, Available at [Our Rural Future: Rural Development Policy 2021-2025](#), Accessed: March 2026

¹⁹³ Local Government Ireland, 2024, National Waste Management Plan for a Circular Economy 2024-2030, Available at [National Waste Management Plan for a Circular Economy 2024-2030 - My Waste](#), Accessed March 2026.

¹⁹⁴ Department of Climate, Energy and the Environment, 2026, Whole of Government Circular Economy Strategy 2026-2028: Accelerating Action, Available at [Circular-Economy Strategy-2026-2028-en.pdf](#), Accessed: March 2026

¹⁹⁵ Department of Housing, Local Government and Heritage, 2023, Heritage Ireland 2030, Available at [Heritage Ireland 2030](#), Accessed: March 2026

¹⁹⁶ Northern and Western Regional Assembly. 2020. Regional Spatial and Economic Strategy 2020-2032 (RSES). Available at: [RSES for Northern & Western Region - Northern & Western Regional Assembly](#). Accessed: January 2026.

¹⁹⁷ Fáilte Ireland, 2023, Wild Atlantic Way Regional Tourism Development Strategy 2023 – 2027. Available at [Wild-Atlantic-Way-Regional-Tourism-Development-Strategy.pdf](#), Accessed: March 2026

- Catchment Flood Risk Assessment and Management (CFRAM) Programme¹⁹⁸
- Flood Risk Management Plan (Corrib River Basin, Galway Bay North River Basin, Galway Bay South East River Basin), 2018¹⁹⁹
- Galway County Development Plan 2022-2028²⁰⁰
- Galway City Development Plan 2023-2029²⁰¹
- Galway City Climate Action Plan 2024 – 2029²⁰²
- Galway City Council Biodiversity Action Plan 2025-2030²⁰³
- Galway City Heritage Plan 2025 - 2030²⁰⁴
- The Galway County Heritage and Biodiversity Plan 2024-2030²⁰⁵
- Galway County Council Local Authority Climate Action Plan 2024 – 2029²⁰⁶

7.5 Appropriate Assessment

The approach for Appropriate Assessment (AA) of the draft GWS is outlined in the NIS and has been undertaken in accordance with Irish and EU statutory requirements. Relevant case law, rulings of the European Court of Justice, and European Commission publications have been taken into account in undertaking the AA for the draft GWS. The following guidance documents were followed:

- AA Screening for Development Management. OPR Practice Note PN01 (OPR, 2021)
- AA of Plans and Projects in Ireland: Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010)
- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001)
- Communication from the Commission on the Precautionary Principle (European Commission, 2000)
- Marine Natura Impacts Statements in Irish Special Areas of Conservation. A working Document (Department of Arts, Heritage and the Gaeltacht, 2012)
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission, 2018)

¹⁹⁸ Office of Public Works (OPW). 2018. Catchment Flood Risk Assessment and Management Programme. Available at: [Flood Plans - OPW Flood Risk Management](#). Accessed: March 2026

¹⁹⁹ Office of Public Works, 2018, Flood Risk Management Plan, Available at [Publications - Floodinfo.ie](#), Accessed: March 2026

²⁰⁰ Galway County Council (GCC). 2022. Galway County Development Plan 2022 – 2028: Available at: [Adopted Galway County Development Plan 2022-2028 | Galway County Council Online Consultation Portal](#). Accessed: March 2026.

²⁰¹ Galway City Council (GCC). 2023. Galway City Development Plan 2023 – 2029. Available at: [Galway City Development Plan 2023-2029](#). Accessed: March 2026.

²⁰² Galway City Council (GCC). 2024. Local Authority Climate Action Plan 2024-2029: Available at: [Local Authority Climate Action Plan \(LACAP\)](#). Accessed: March 2026.

²⁰³ Galway City Council (GCC). 2025. Galway City Biodiversity Action Plan 2025 – 2030. Available at: [Galway City Council Biodiversity Action Plan 2025-2030](#). Accessed: March 2026.

²⁰⁴ Galway City Council (GCC). 2025. Galway City Heritage Action Plan 2025 – 2030. Available at: [Dréachtphlean Oidhreacht Chathair na Gaillimhe 2024-2029](#). Accessed: March 2026.

²⁰⁵ Galway Community Heritage. 2025. Galway County Heritage & Biodiversity Action Plan 2024 – 2030. Available from [Galway County Heritage and Biodiversity Plan](#). Accessed: March 2026,

²⁰⁶ Galway City Council (GCC). 2024. Local Authority Climate Action Plan 2024-2029: Available at: [Local Authority Climate Action Plan \(LACAP\)](#). Accessed: March 2026.

The first stage screening has been undertaken and is provided in the AA Screening Report. Following refinement of the draft GWS, European sites were re-screened once specifics were detailed more fully. The AA Screening included an assessment of the draft GWS alone, and in combination (including cumulative) effects of other projects and plans in accordance with guidance on AA. This has concluded that likely significant effects cannot be ruled out, and a second stage AA (NIS) was required to be undertaken on the draft GWS.

The NIS identifies all European sites that could potentially be affected by the preferred options in the draft GWS. It sets out the methodology used to determine whether adverse effects caused by the preferred options of the draft GWS on the integrity of European sites can be ruled out following mitigation. This includes consideration of the relevant zone of influence, conservation objectives, qualifying habitats and species, and the pathways through which effects may occur. The approach recognises the high-level nature of the current draft GWS and the aim to incorporate AA into the option and approach assessment for the draft GWS. The results of the AA informed the SEA, including the SEA cumulative effects assessment. The NPWS, DHLGH, and EPA will be consulted on the AA findings.

The AA Screening Statement and NIS are provided as standalone separate reports for consultation alongside the SEA report. **Consultation as part of the SEA process is outlined in Section 3** in this report, with SEA statutory consultation bodies listed in Section 3.4

7.6 Limitations and Assumptions

The draft GWS covers a large geographical area, and the baseline summarised in this report is a high-level review of conditions, pressures and trends. The assessments undertaken as part of the SEA at this stage are high-level and desk based. They are considered to be appropriate to the draft GWS, including its objectives, types of solutions and options proposed, and the methodology set out in the Strategy. Environmental impacts and costings will be further reviewed where options identified in the draft GWS are taken forward and developed as projects. No statutory consent or funding consent is conferred through the draft GWS. Any projects that are progressed following the draft GWS will require further study including feasibility studies and design development. Individual environmental assessments will also be required in support of planning applications (where a project requires planning permission).

8. Background to the Draft GWS

8.1 Overview of Draft GWS Process

The draft GWS has been developed following a structured methodology designed to guide the development of sustainable, evidence-based wastewater solutions. A high-level optioneering process was undertaken to determine strategic options, of which nine were identified. As part of the SEA Environmental Report, a fine screening of the nine options is undertaken in **Section 8.4**, while **Section 8.2** and **Section 8.3** give an overview of the high-level optioneering process which resulted in nine possible options.

The draft GWS approach comprises a structured process designed to guide the development of sustainable, evidence-based wastewater solutions. This process, illustrated in **Figure 8-1**, provides a clear and methodical framework for assessing current and future needs, identifying challenges and opportunities, and prioritising investment decisions that support long-term service resilience and environmental protection.

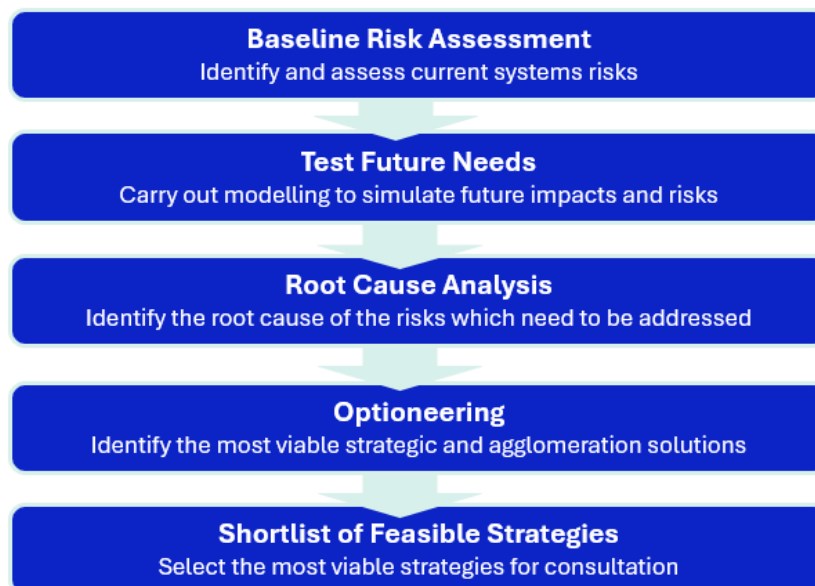


Figure 8-1: Overview of Draft GWS Methodology

Baseline Risk Assessment: This stage focuses on evaluating the current performance of each agglomeration. The assessment is based on measured and modelled data using 2022 as the baseline. A range of performance metrics are assessed and assigned a risk status (Red, Amber, Green). This supports the identification of the more material issues which need to be resolved and while this type of classification is considered appropriate for strategic level planning, more refined risk assessments would be required at later more detailed design stages. The risk assessment looks at issues across wastewater assets, enabling us to apply systems-thinking and take a holistic view to identify the root cause of problems.

Test Future Needs: We built on the baseline risk assessment to identify long-term planning risks. Using network and water quality models, we projected the impact of growth and climate change on our networks and treatment works. We modelled the impacts and captured the anticipated performance at three discrete time horizons – 2040, 2055 and 2080. We predicted the

performance of our assets using consistent metrics. We applied the same risk status as those used in the baseline risk assessment to provide us with a comparative assessment of where and when risks would emerge.

Root Cause Analysis: Using our baseline risk assessment and modelling, we interrogated the models and consulted internal subject matter experts to identify the root cause of identified risks. These root causes formed the basis of our needs list before we started the optioneering stage.

Optioneering: An initial, unconstrained long list of potential options was developed with stakeholders, which were then screened out at a strategic level (i.e., the GWS study area) and subsequently at an agglomeration level. This refinement was based on the technical feasibility and viability of each option to resolve the identified risk. This screening was finalised in a strategy workshop where modellers, planners, designers, engineers, scientists, network and plant operators, and technical specialists (e.g., Ecology, Hydrology) discussed and shortlisted the options. The resulting shortlist is a list of all options which could support the needs of the region.

Shortlist of Feasible Options: The options were further evaluated with a focus on deliverability, alignment with long-term objectives, and integration with existing infrastructure. The outcome was a shortlist of feasible options for each agglomeration and design horizon. Each feasible option was assessed from an environmental and ecological perspective to ensure consistency with regulatory requirements and sustainability principles as part of the SEA and AA process.

Each option also undergoes further environmental assessment to ensure consistency with regulatory requirements and sustainability principles as part of the SEA and AA process.

8.1.1. Strategy Timeline

A core principle of the Strategy is that interventions should be progressive, integrated, and resilient. Measures implemented today should be able to align seamlessly with those required in future planning epochs, avoiding the need for costly or disruptive redesigns. As such, steps will need to be taken to align the Galway Drainage Area Plan with the high-level implementation of the Strategy, as illustrated in Figure 8-2. For the draft GWS, impacts were modelled and captured the anticipated performance at three discrete time horizons – 2040, 2055 and 2080.

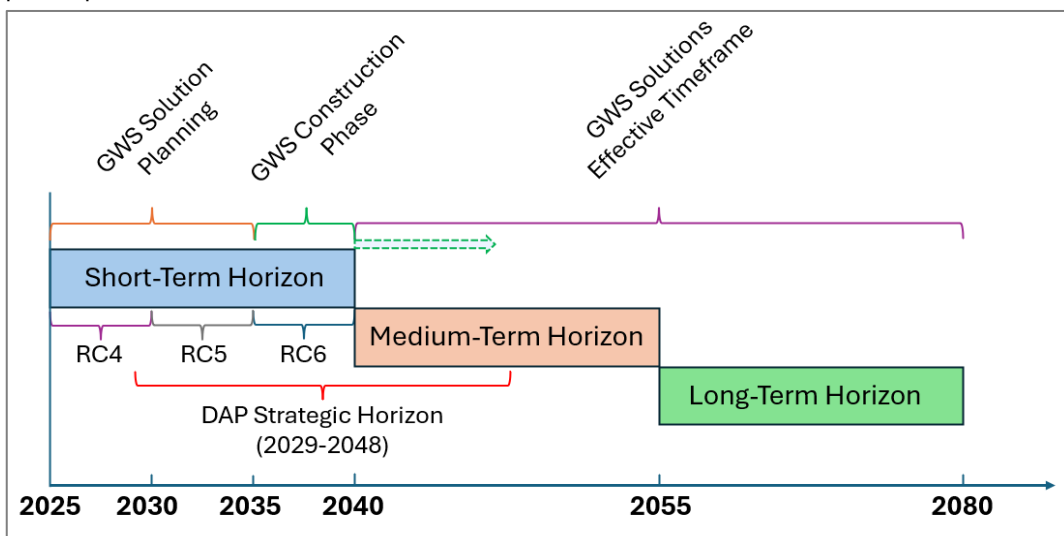


Figure 8-2: High level strategy horizon timeline

8.1.2. Strategy Limitations

The draft GWS has been developed at a scale appropriate for strategic planning - setting out clear objectives, high-level recommendations, and long-term direction, and is not intended to function as an operational or project-specific delivery tool. To ensure clarity around its intended use and limitations, the following areas are explicitly excluded from the scope of the GWS.

Localised, Short-Term Asset Planning: The Strategy does not cover day-to-day asset management activities, such as maintenance scheduling, routine inspections, or minor infrastructure repairs. These are instead addressed through UÉ's ongoing operational and maintenance programmes.

Pollution incidents caused by operational issues (e.g. blockages, collapses, pumping station failure) are not included as part of the assessment.

Detailed or Concept-Level Engineering Design: The Strategy does not include technical drawings, design specifications, or construction-ready documentation for individual assets such as pipelines, pumping stations, or treatment plants. These tasks will be addressed in future project delivery phases, such as Preliminary and Detailed Design.

Comprehensive Economic Appraisal: Although the Strategy identifies and qualitatively assesses a range of wastewater management options, it does not provide detailed cost-benefit analyses, life-cycle costing, or full business case development for each scenario. Robust economic evaluation, including financial modelling, net present value analysis, and funding strategy, will be undertaken during the Preliminary Business Case stage and subsequent project planning processes.

More detailed planning activities - such as economic assessments and detailed engineering appraisals - are intentionally deferred to future implementation phases, where they will be addressed at the asset or scheme level. This allows for compliance with statutory planning requirements and the integration of local data, stakeholder input, and environmental assessments.

The draft GWS remains focused on guiding large-scale infrastructure investment, ensuring environmental compliance, and building long-term resilience to climate change. It does not replace operational processes or deliver construction-ready designs. Instead, it offers a strategic framework aligned with national and regional policies, providing the foundation for informed, adaptive planning and phased delivery over the coming decades.

8.1.3. Network and Water Quality Modelling

There are 50 wastewater pumping stations (WWPs) and 29 stormwater overflows (SWO) across the four WwTP agglomerations in the draft GWS study area, with the majority located in the Galway Metropolitan Area. The two main aspects of modelling undertaken for the draft GWS were:

- **Network Modelling** (covering sewer system networks) – to replicate the piped drainage systems collecting flow and load generated within the agglomerations of interest and assess the treated effluent, storm overflow performance as well as sewer flooding.
- **Water Quality Modelling** (covering waterbody impacts) – to evaluate impacts and benefits on freshwaters and initial dilution requirements in marine waters with the inputs from observed monitoring data and network model outputs.

Table 8-1 presents an overview of the modelling approach taken for each agglomeration in the draft GWS study area. For more detail, refer to Galway Wastewater Strategy – *Appendix 2 - Our Approach to Modelling and Climate Change*.

Table 8-1: Overview of modelling approach by agglomeration in the draft GWS

Agglomeration	Network Modelling	WwTP Monitoring	Freshwater Water Quality	Coastal Initial Dilution Modelling
Galway City	✓	✓	✗	✓
Athenry	✓	✓	✓	✗
Claregalway	✓	✓	✓	✗
Moycullen	✓	✓	✓	✗

The hydraulic models for Galway City, Athenry and Moycullen have undergone network flow monitoring and have been verified against observed data in order to represent both dry- and wet-weather flows.

The impact of final effluent from the WwTPs on the receiving waterbody was assessed with consideration of the WFD classification. Modelling was used to determine whether the discharge met the WFD standards, and if not what ELVs would be necessary to achieve them. Discharges from Athenry, Moycullen and Claregalway agglomerations were assessed. Modelling of the impact of intermittent discharges to freshwater was undertaken for all SWOs which discharged more than 1% of the year. The assessments used simulated SWO spills and final effluent data and models the mixing of this discharge with statistically representative samples of river flow and quality.

Water Quality modelling was used to assess the feasibility of different discharge locations for the development of a new WwTP. Discharges to transitional and coastal waters in Galway Bay and the Corrib Estuary were evaluated. This included modelling initial dilution and feasible effluent quality requirements and outfall configurations likely to meet WFD objectives.

8.1.4. Growth Projections

A clear understanding of future population estimates is essential for accurately identifying future needs. Four separate population projections were carried out to estimate the regional loads at WwTPs at three key design horizons of 2040, 2055 and 2080. Domestic load, commercial load, institutional load, and industrial load were considered. A detailed assessment was carried out to

evaluate the current agglomeration and catchment population, using the latest available 2022 census data from the Central Statistics Office, along with existing industrial and commercial loadings. A review of census data from 2002-2022 was used to understand population trends which have resulted in current loadings. From 2022 to 2025, regional growth rates were applied to bring projections close to the year of publication of the draft GWS. The National Planning Framework (NPF) and its subset Regional Spatial and Economic Strategy (RSES) offer population projections up to the year 2040 which also cover the initial project design horizon. These projections have been aligned in the short term (up to 2031) with Galway City and Galway County Development Plan targets. From 2040 through to 2055, CSO 2051 projections were used and extended through to 2055. The applied rate is an average across the six scenarios outlined in the projections. Beyond 2055, through to 2080, the Eurostat 2100 projected growth rate of 0.22% was used. According to EUROPOP2023, Ireland will experience continued population growth through the first half of the century, then stabilisation and potential decline later in the century, depending on net migration.

Headroom is defined as the extra treatment capability built into the biological stage of a WwTP beyond what is currently being used to account for natural variability in load. For Galway City, a specific headroom allowance of 20% has been implemented in accordance with its large urban settlement classification. Athenry, Claregalway, and Moycullen have each been allocated a conservative headroom allowance of 15%. These headroom allowances have been applied to domestic, institutional, and commercial wastewater loads projected at the key strategy horizon of 2040.

In Summary, the total PE to be treated is estimated to double to around 383,000 by 2080, with the majority occurring by 2040 (277,700 PE). Most of the population and industrial growth will occur to the east of the city (i.e., 82%), placing the greatest demand on the infrastructure in this area. Additional capacity will need to be provided through expansion of existing WWTP(s) or the development of new WWTP(s).

Table 8-2: Summary of PE per agglomeration and Strategy horizon

Agglomeration	2022 Baseline	2040 Horizon	2055 Horizon	2080 Horizon
Mutton Island	143,800	249,400	335,900	350,200
Athenry	6,600	11,900	13,200	13,800
Claregalway	2,700	5,700	6,400	6,700
Moycullen	2,700	3,900	4,400	4,600
Furbogh	1,400	1,900	2,100	2,200
Clarinbridge	1,200	1,900	2,200	2,300
Craughwell	1,500	2,400	2,700	2,800
Kilcolgan	400	600	700	700
Total	160,300	277,700	367,600	383,300

According to upper bound estimates, the analysis suggests that, in the absence of intervention, Mutton Island (serving Galway City, Bearna, and Oranmore) and Athenry are projected to exceed their design capacities by the 2040 design horizon by 46% and 23%, respectively. Moycullen and Claregalway are anticipated to marginally surpass their current design capacities by 8% and 5% by 2055. These latter agglomerations are expected to remain operational through to 2080, contingent upon ongoing monitoring of strategic growth, targeted infrastructure enhancements, and capacity optimisation initiatives to maximise existing assets, pending further detailed modelling and appraisal within the Strategy. The growth projections show that both Mutton Island and Athenry agglomerations may require significant investment, underscoring the importance of prompt action during the Strategy's option development process.

It should be noted that population projections are inherently uncertain, and a precautionary and conservative approach to risk has been employed given an extensive design horizon up to 2080. In practice, this means that infrastructure plans are designed to accommodate higher-end population estimates, ensuring resilience against unexpected demographic shifts. Population growth can be influenced by several factors and as a result, population projections should be revisited in line with Strategy revision period (i.e., every 6 years).

8.1.5. Climate Change

Reliable data on projected climate conditions in Ireland were drawn from the EPA's National Climate Change Risk Assessment. Standardized, bias-corrected projections were sourced from the TRANSLATE project developed by Met Éireann and accessed via its online portal. The UK Climate Projections 2018 were used to assess coastal flood risks and to inform the draft GWS modelling approach, particularly in relation to impacts on coastal infrastructure and habitats.

The following climate change projections were made in the draft GWS modelling approach:

- **Air Temperature:** Predicted changes in air temperature were applied to the assumed surface water temperature applied in the river models. River water temperature governs ammonia decay rates, proportions of ionised and unionised ammonia fractions and dissolved oxygen dynamics and hence changes in river temperature will affect predicted water quality.
- **Rainfall:** TRANSLATE2RED²⁰⁷²⁰⁸ rainfall time series projections for Galway were used.
- **Flooding:** Uplift factors for design storms, as recommended by UÉ's modelling specifications, were applied.
- **Sea level rise:** As per EPA and OPW figures for sea level rise by 2100 (refer to Galway Wastewater Strategy *Appendix 2 - Our Approach to Modelling and Climate Change*), an uplift factor of 1000mm was applied to the tidal level within the Galway City Sewer Network model.

²⁰⁷ The TRANSLATE2RED tool was developed by Amphos21 for UÉ

²⁰⁸ The TRANSLATE2RED is built upon the methodology established by the REDUP tool, which utilizes uplift factors to adjust historical rainfall time series, thereby accommodating for the anticipated impacts of climate change.

9. Assessment of the Draft GWS

9.1 Current Performance

Indicators of current and emerging risks at the draft GWS Study Area's four WwTPs, as well as capacity limitations in the network and environmental risks, were identified. Current and recent data were used to undertake a baseline assessment. Analysis of historical WwTP asset data and network model outputs were used to establish current system performance.

The following performance indicator metrics were used for each agglomeration within the GWS to assess the change in risk across the discrete time horizons (2040, 2055, 2080).

- **Flood Risk** - risk of internal and external sewer flooding in a sub-catchment, or area of the network
- **Stormwater Overflow (SWO) Environmental Performance** – as per the Procedures and Criteria for SWOs set out in the UWWTD
- **rUWWTD Load Risk** - risk of failure to meet the indicative non-binding objective of the recast UWWTD - that SWO discharge should be no more than 2% of the annual collected urban wastewater load calculated in dry weather conditions.
- **Pollution Risk** - manholes within 100m of watercourses that are predicted to flood during a 1 in 5-year return period rainfall event
- **WwTP Compliance** (Hydraulic capacity)
- **WwTP Quality Compliance** (Emission Limit Values (ELVs))
- **WFD Status:** Any deterioration in WFD status which is associated with urban wastewater pressures

9.1.1. Network – Stormwater Overflows

Storm water overflows (SWOs) are a discharge of untreated effluent caused by overloading of the network. As there are 29 SWOs in the GWS study area, and 26 are in Galway City, 2 in Athenry and 1 in Moycullen, analysis of performance was heavily focused on the Galway City agglomeration. The environmental impact of SWOs was assessed through the four criteria namely Aesthetic, Water Quality Impact, National Regulations, and Dry Weather Flows.

It was determined that Galway City/**Mutton Island** is a high-risk catchment regarding network performance, with aesthetic issues, risks associated with nearby bathing waters, regulatory concerns related to dry weather discharges, and a risk of non-adherence with the future non-binding objective outlined in Annex V of the rUWWTD to progressively and significantly reduce pollution from stormwater overflows and urban runoff.

Athenry is classified as a medium-risk catchment regarding network performance. As growth increases, the WFD ammonia and BOD standards are forecasted to be exceeded and there is a risk of potential non-adherence with the non-binding objective outlined in Annex V of the rUWWTD.

Moycullen is classified as a low-risk catchment regarding network performance, although it should be noted that the sewer network model used is of low confidence. Although sewer network

modelling demonstrates that WwTP discharges require aesthetic screening, the frequency and volume of discharges for all growth scenarios can be considered negligible and therefore the WwTP does not have any other associated risks.

Claregalway is a fully modern separate sewerage system and therefore does not have any SWOs and any associated risks.

9.1.2. Network – Flood Risk

Flood risk in the study area was assessed using a baseline model and the 2055 and 2080 growth models. The 2055 model uses the rainfall climate change uplift factor of 20%, and the 2080 model uses an uplift factor of 25%. Flood risk was assessed using 1-in-20-year return period storms and hydraulic flooding analyses.

Athenry has a medium flood risk in 2055, which rises to high by 2080. Several sub-catchments within the Galway City/**Mutton Island** agglomeration have high and medium flood risks in 2055 and 2080. Flood risks for **Claregalway** and **Moycullen** were not identified.

As detailed in Galway Wastewater Strategy *Appendix 2 - Our Approach to Modelling and Climate Change*, there is low confidence for the Moycullen agglomeration as no sewer network monitoring was available to assess the distribution of urban runoff in the sewer network which reduces confidence in model predictions for flood risk. It is recommended that more detailed modelling is undertaken at Moycullen.

9.1.3. Wastewater Treatment Plants

Assessment of WwTP performance considered the hydraulic and biological constraints at each site alongside current loadings and headroom allowance. The last 5 years of final effluent data was used to assess the efficacy of the treatment process and how consistently it achieves compliance with ELVs. The status of the receiving water and the impact of discharges on WFD classifications was also considered. Despite the proximity of bathing waters in the area, there are no bacterial (faecal coliforms, *E. coli* or Intestinal Enterococci) ELVs at any of the WWTPs.

Without intervention, more than 90% of the growth within the study area is expected to be treated at **Mutton Island** WwTP. Without intervention, growth projections indicate that the WwTP will reach its capacity (170,000 PE) by 2040, even under the most favourable projections. In its current configuration, **Athenry** WwTP has a capability up to 9,500 PE as specified in its Annual Environmental Report. If housing development accelerates over the next 15 years at the rate specified in the Regional Spatial and Economic Strategy (RSES), the facility's capacity may be exceeded by 2030. Downstream of Athenry WwTP, Clarinbridge_030 and Clarinbridge_040 have 'Poor' (monitoring) (2019-2024) WFD status and are 'At Risk', with urban wastewater an identified pressure for both waterbodies. Projected growth in **Claregalway**, with a capacity of 2,408 PE, indicates that the WwTP will be able to absorb the additional load up to the planning horizon of 2055. Similarly, the **Moycullen** WwTP, with a PE of 4,000, is expected to be able to meet growth up to 2055. No flow monitoring is installed at the inlet works to measure total inlet flow, which makes any assessment of flow unreliable. As growth is monitored over the period of the strategy,

the WwTP will need to implement a flow measurement system, compliant with industry standards, such as MCERTS.

The basis for assessing the 'Do-Nothing' scenario assumes the continuation of current or committed developments, but without the implementation of the GWS. An in-depth assessment of the current treatment capacities has been undertaken for the draft GWS, providing a comprehensive overview of the existing treatment streams and processes at the WwTPs within the draft GWS Study Area (see Galway Wastewater Strategy Appendices: *Appendix 3 Status and Performance of Sewage System* and *Appendix 4 – Impact on Water Quality*). This evaluation includes a high-level performance assessment for each WwTP, focusing on their compliance with current wastewater discharge licences and performance relative to the UWWTD and rUWWTD. The assessment serves as a baseline for understanding the current operational status and identifying areas requiring action. A summary of each site, detailing key information such as design capacity, existing operational issues, and any upgrades that are either in progress or proposed for the future is provided in Galway Wastewater Strategy *Appendix 3 Status and Performance of Sewage System*. Flow and load analyses were undertaken to understand the current performance and limitations of each WwTP. Recommendations for the draft GWS were development based on current capacities and performance, projected demands, and potential future challenges. The outputs of the assessment are summarised in Galway Wastewater Strategy *Appendix 5 - Optioneering and Feasible Option Development*.

Based on the comprehensive findings from the WwTP assessment and the detailed flow and load analysis, coupled with population projections, timelines for proposed upgrades were identified. The timelines are crucial in relation to preventing WwTPs from exceeding their operational capacities, which could lead to a deterioration in operational efficiency and treatment quality and resulting impacts on the water environment with related biodiversity, community and economic effects. The results of the analysis of the continuation of the current situation, the 'Do-Nothing' scenario, are outlined in **Section 9.2. Table 9-1** summarises the findings of the WwTP performance assessment and demonstrates the hydraulic pressures and the wastewater discharge licence (WDDL) compliance pressures that the existing WwTPs will be placed under in a 'Do-Nothing' (i.e., continuation of current situation) scenario and the need for action to be taken in upgrading existing assets to meet future demands.

In the 'Do-Nothing scenario', the construction environmental impact is considered as neutral as no construction is anticipated. However, the continued operation of the current regime could result in significant negative impacts on water environment, human health, climate change and biodiversity; and moderate impacts on landscape, cultural heritage, geology and air quality (e.g. odour).

The challenges currently impacting the draft GWS Study Area can be summarised as:

































- Impact on wastewater systems because of rapid growth
- Wastewater discharge licence compliance challenges associated with existing WwTPs and sewerage networks
- Pressure on installed wastewater treatment capacity
- Deterioration of receiving waters and biodiversity

- Stricter requirements outlined in the revised Urban Wastewater Treatment Directive (rUWWTD) on existing wastewater systems
- Climate change

Each WwTP has been assigned specific performance indicators pertaining to hydraulic capacity and compliance with wastewater discharge licencing requirements, without any capital intervention (see Galway Wastewater Strategy *Appendix 3 - Status and Performance of the Wastewater System*). A red category signifies that immediate investigation and intervention are required due to the identification of a significant need. Amber indicates that a need exists; however, the corresponding intervention involves lower capital requirements. Green denotes that no needs have been identified.

Wastewater improvement projects are likely to be smaller-scale schemes due to the local focus and the absence of strategic level appraisal. It is likely that wastewater infrastructure will be unable to keep pace with the increased demand for new serviced land for housing, commercial development, and industry. Under the ‘Do-Nothing’ scenario there is also reduced potential to identify mitigation requirements early on and to influence the selection of solutions with reduced environmental impacts and potentially wider benefits.

Table 9-1: WwTP Performance Indicators

Mutton Island WwTP	Hydraulic Capacity Risk	WWDL Compliance
Baseline		
2040		
2055		
2080		
Athenry WwTP	Hydraulic Capacity Risk	WWDL Compliance
Baseline		
2040		
2055		
2080		
Claregalway WwTP	Hydraulic Capacity Risk	WWDL Compliance
Baseline		
2040		
2055		
2080		
Moycullen WwTP	Hydraulic Capacity Risk	WWDL Compliance
Baseline		
2040		
2055		
2080		

9.2 'Do-Nothing' Scenario

The 'Do-Nothing' counterfactual scenario was assessed using fine screening criteria, as per **Table 9-2** below. The assessment of the 'Do-Nothing' scenario is based on the information outlined in **Section 9.1** above. The 'Do-Nothing' scenario assessment demonstrates that, over the long term, the absence of investment in a strategy to improve wastewater infrastructure in the draft GWS Study Area would result in significant adverse effects across multiple environmental receptors, particularly in relation to water quality, biodiversity, human health, and material assets (**Table 9-3**). Ongoing system deterioration, capacity exceedance, and increased pollution risks highlight the need for a coordinated and forward-looking response. A wastewater strategy is therefore required to upgrade and expand treatment and network capacity, ensure compliance with environmental standards, and reduce the frequency of overflows and pollution incidents.

Table 9-2: Assessment criteria for fine screening of the draft GWS

Major Positive/ Beneficial	7	Plan approach / alternative is likely to make a considerable positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects.
Moderate Positive/Beneficial	6	Plan approach / alternative is likely to make a moderate positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects
Minor Positive/Beneficial	5	Plan approach / alternative has potential to provide a minor positive contribution to SEOs or improve likelihood of delivery of positive effects and reduce risk of adverse effects.
Neutral/Negligible Risk	4	Plan approach / alternative has negligible of contribution or conflict with SEOs or low risk of effects or uncertainty of effects.
Minor Risk	3	Plan approach / alternative has minor potential to conflict to a greater extent with SEOs or increase risk of adverse effects.
Moderate Adverse Risk	2	Plan approach / alternative has moderate potential to conflict to a greater extent with SEOs or increase risk of adverse effects
Major Adverse Risk	1	Plan approach / alternative has potential to conflict to a greater extent with SEOs or high risk of significant adverse effects.

Table 9-3: Assessment of 'Do-Nothing' Scenario

Do Nothing – Counterfactual			
	Strengths	Constraints	Score
Water Environment (W1)	No short-term construction-related disturbance to waterbodies	Continued discharge of inadequately treated effluent; increased risk of pollution incidents; deterioration in water quality status; non-compliance with regulatory standards	1
Population, Economy, Tourism and Recreation, and	No short-term disruption from construction activities	Odour nuisance, visual impacts from effluent, and increased public health risks; potential negative	1

Human Health (P1)		effects on tourism, amenity value, and local economic activity	
Climate Change (C1)	Avoids embodied carbon associated with new infrastructure	Increased frequency of stormwater overflows due to capacity constraints; reduced system resilience to extreme weather events; potential increase in emissions from inefficient or failing systems	2
Biodiversity (B1)	No short-term disturbance to species or habitats from construction works	Ongoing water pollution affecting water dependent species and habitats; deterioration of ecological status; impacts on designated sites	1
Material Assets (M1)	No effects on utilities or other infrastructure due to lack of construction	Progressive deterioration of infrastructure; increased risk of system failures, leaks, and bursts; higher long-term maintenance and emergency repair costs	1
Landscape, Townscape and Seascape (L1)	No short-term construction-related visual intrusion	Visual degradation from pollution, overflows, and poorly maintained infrastructure; negative effects on landscape and amenity value	1
Cultural Heritage - Archaeological and Architectural (H1)	No short-term disturbance to known or unknown heritage assets from construction	Potential indirect impacts where pollution affects the setting or condition of heritage assets	3
Geology and Soils (G1)	No excavation or soil disturbance	Risk of soil and groundwater contamination from leaks, bursts, or overflows; gradual degradation of soil quality	2
Air Quality (A1)	No short-term construction-related dust or emissions	Deterioration in local air quality due to odours and emissions from failing or overloaded infrastructure	2
Total Score			14

9.3 Unconstrained Long List of Interventions

The following terminology is used in this, and subsequent sections:

- **Interventions** - are actions that we could be undertaken to address the root cause of an issue. Interventions have the potential to provide a performance improvement (e.g. capacity, compliance, resilience, cost efficiency) or mitigate a risk in the system.

- **Options** - An option may be a combination of interventions assembled into a plan to solve the needs addressed as part of the GWS risk assessment. They provide alternative ways of meeting the GWS objectives and are compared against each other.

Scenarios - a set of external assumptions (such as demographics, climate, regulatory) about the future under which options are tested. They provide context for testing options or interventions. These have largely been tested in Galway Wastewater Strategy *Appendices 1-4*.

As part of the optioneering phase of the draft GWS process, an unconstrained long list of interventions was developed with internal stakeholders and subject matter experts. The long list was subsequently assessed against the strategic needs of the Galway region and the needs of each agglomeration to produce a feasible list of interventions. Established interventions were considered, with further examples taken from good practice and comparable wastewater strategies used in the sector.

Interventions were themed and ranked within a Total Expenditure (TOTEX) hierarchy to provide a basis for comparative assessment (see **Figure 7-1**). The TOTEX hierarchy directly implements ISO 55001 (Asset Management) and ISO 55002 principles by focusing on the "Total Cost of Ownership". The TOTEX hierarchy prioritises lower-cost, preventative actions before higher-cost infrastructure solutions, as follows:

- **Eliminate:** Preventing issues so no investment is required
- **Collaborate:** Working with communities and other organisations
- **Optimise:** Getting more performance from existing systems
- **Enhance:** Improving or strengthening existing infrastructure
- **Build:** Delivering new infrastructure where necessary

Interventions were categorised according to the corresponding need, and hybrid options (i.e. combinations of complementary interventions) were explored to better address the challenges within the draft GWS Study Area. Discussions at a workshop in September 2024 led to a final agreed long list of interventions for the draft GWS study area. The reasons for discounting and not carrying forward certain interventions in the TOTEX Hierarchy are logged within the discount register in Galway Wastewater Strategy *Annex B-F of Appendix 5 - Our approach to optioneering & feasible development*. Interventions with clear barriers or low viability were discounted and the reasons for exclusion documented in the discount register. Key reasons for discounting options related to the uncertainty or suitability of the intervention to address the underlying issues, the acceptance of the intervention by regulatory bodies, and place-based considerations which made the intervention unsuitable for the agglomeration.

At a strategic level, the intervention of reviewing discharge permits to modify their consents and consider flexible permitting were discounted. These options do not support the delivery of a strategy which protects the environment and does not offer future resilience, as it risks deferring the investment need into a later period. The intervention of sustainable treatment streams to deal with emerging legislative targets was considered unlikely to deliver the outcomes needed at the scale required and was also discounted.

In line with the TOTEX hierarchy, the expansion of current sites has the benefit of reducing costs and maximising the use of existing assets and infrastructure. The feasibility of expansion at each of the four existing WwTPs was assessed at a high level against the anticipated future needs to 2080 (i.e. to transfer the additional load from growth to an existing WwTP asset). Each of the existing WwTPs was individually evaluated to assess if future compliance with current environmental and regulatory standards could reasonably be achieved with the anticipated increased loadings to treat all the study area growth. Remaining effective interventions were subsequently evaluated further to assess their suitability at the agglomeration level.

9.4 Primary Screening of Interventions (Coarse Screening)

9.4.1. Agglomeration Level Primary Screening

Primary screening was carried out at an agglomeration level, which considered the specific risks, issues, local constraints, and dependence identified in each of the four UÉ wastewater agglomerations in the GWS study area, which are Galway City (Mutton Island), Athenry, Claregalway and Moycullen.

Sensitivity modelling was undertaken to evaluate the likely efficacy of different intervention strategies identified within the TOTEX Hierarchy. The draft GWS study area comprises six wastewater networks ranging from older combined systems in urban centres like Galway and Athenry to fully separate systems in newer developments such as Claregalway. The modelling specifically assessed the sensitivity of the networks to traditional sewer separation, urban runoff misconnections, and both tidal and groundwater infiltration. The sensitivity of the results enabled us to identify which interventions would provide the greatest impact for the relevant catchment requirements.

9.4.1.1. Mutton Island Agglomeration

Mutton Island WwTP collects and treats sewage and surface water from both combined and separated sewer systems, serving Galway City and suburbs, including Oranmore and Bearna. Mutton Island's catchment is separated into an east section and a west section by the River Corrib. The size of the WwTP and its catchment make this the most significant agglomeration within the study area. Furthermore, most storm water overflows (SWOs) in the study area (26 of 29) are in the Mutton Island agglomeration. As such, a high proportion of the study area risks are confined to the assessment and performance of this critical agglomeration. Some SWOs are near bathing waters, recreational waters, and protected habitats (e.g. SACs and SPAs), where untreated overflow load will need to be strictly controlled under the recast Urban Wastewater Treatment Directive (rUWWTD).

Mutton Island WwTP comprises preliminary, primary and secondary treatment processes, with a design PE of 170,000²⁰⁹. The facility currently discharges via a 400m sea outfall into the Corrib

²⁰⁹ Uisce Éireann (UÉ). 2024. Annual Environmental Report. Available at: [Annual Environmental Report 2024](#). Accessed: March 2026.

Estuary. A secondary discharge (SWO) is present for storm or emergency conditions, releasing effluent to the Corrib Estuary near Mutton Island's western shore.

Mutton Island WwTP Constraints:

Projected growth in the area served by Mutton Island WwTP indicates that the plant is projected to reach its operational limit by 2040. There is a risk that the plant will not be able to meet its discharge licence requirement with the projected increase in load by 2040. Even tighter discharge standards for total nitrogen and total phosphorus would be required by 2039, in line with rUWWTD regulations (for plants treating over 150,000 PE). There is a future risk that under the rUWWTD, the plant would need to implement quaternary treatment due to its size and discharge location. The expansion of site capacity is restricted by its island location, with existing infrastructure occupying approximately 2.29 hectares of the total 5-hectare area. Nereda treatment and a conventional Activated Sludge Process (ASP) cannot be built in the available space. These factors led to discounting of WwTP Site expansion.

Interventions taken forward for Mutton Island WwTP:

- **WwTP decentralisation** is a viable option to protect the existing infrastructure from overloading and help to minimise the impact to the environment. A limitation of decentralisation is that there is no suitable location to divert load to in the short term. As such, an immediate resilience upgrade will be required at Mutton Island to ensure that the site can treat the current and future population up to at least 2040. This will allow time for capacity to be created elsewhere.
- Downsizing the WwTP to approximately 100,000 PE, while maintaining appropriate headroom, would effectively manage potential future regulatory risks on a constrained site in the long-term (beyond 2040). This approach will require a phased transfer of load away from Mutton Island to an alternative site, when one becomes available.
- **WwTP Energy Efficiency Measures** will be taken forward as an important intervention to support meeting the rUWWTD objectives which requires that WwTP's treating above 10,000 PE must achieve energy neutrality by 2045 objective. The implementation of energy efficiency measures at the site is beyond the scope of the draft GWS.

Mutton Island Network Constraints:

- **SWO Environmental Performance** – There are multiple articles which govern the operation of SWOs set out in the rUWWTD (e.g. a non-exhaustive list would include Article 3, Article 5, and Annex V) and in the Performance and Criteria in relation to SWOs. Assessment of the Galway city/Mutton Island network performance identified 4 SWOs in the agglomeration which fail to meet the aesthetic criteria in the baseline scenario. These sites will require the fitting of screens. Modelling of the SWOs demonstrates that the agglomeration is predominantly sensitive to **tidal ingress** and **removal of stormwater misconnections**. **Combined sewer separation** is also effective although difficult to achieve and would have to be targeted. **Groundwater and tidal infiltration reduction** is an effective intervention in pockets of the catchment.

- **Flooding Performance** - A baseline risk to internal and external sewer flooding was identified - at the sub-catchment level - in areas to the west of Galway City and the centre of Galway City. This flood risk increases up to 2080 due to growth and climate change. The network system is predominantly combined in these areas, which suggests that increased **separation of surface water** could help mitigate this risk.

Interventions taken forward for Mutton Island Network:

- **Combined sewer separation, Removal of Storm Water Misconnections, Tidal Ingress Reduction** and **Groundwater/Tidal Infiltration Reduction** are all taken forward as viable interventions because they are relevant for different areas of the network in Galway City and Oranmore.
- **Smart Networks and Intelligent Operation** cover a broad range of approaches but fundamentally will allow the system to be operated proactively. In the case of phasing flows from the Mutton Island to a new regional WwTP, the transition to smart networks will be highly beneficial. This will support service continuity before the existing facility reaches its capacity limit. Active sewer control should be investigated as part of this intervention to create capacity further downstream and limit the load lost.
- **Surface Water Separation and removal** are retained as an option for use in areas where combined systems result in a higher flood risk.

To address medium and long-term needs there may be the opportunity to introduce green or nature-based solutions to mitigate future issues. As such, **Strategic Blue-Green Corridors** and **Green or SuDS Storage** are taken forward as viable interventions to create additional capacity in the Mutton Island network.

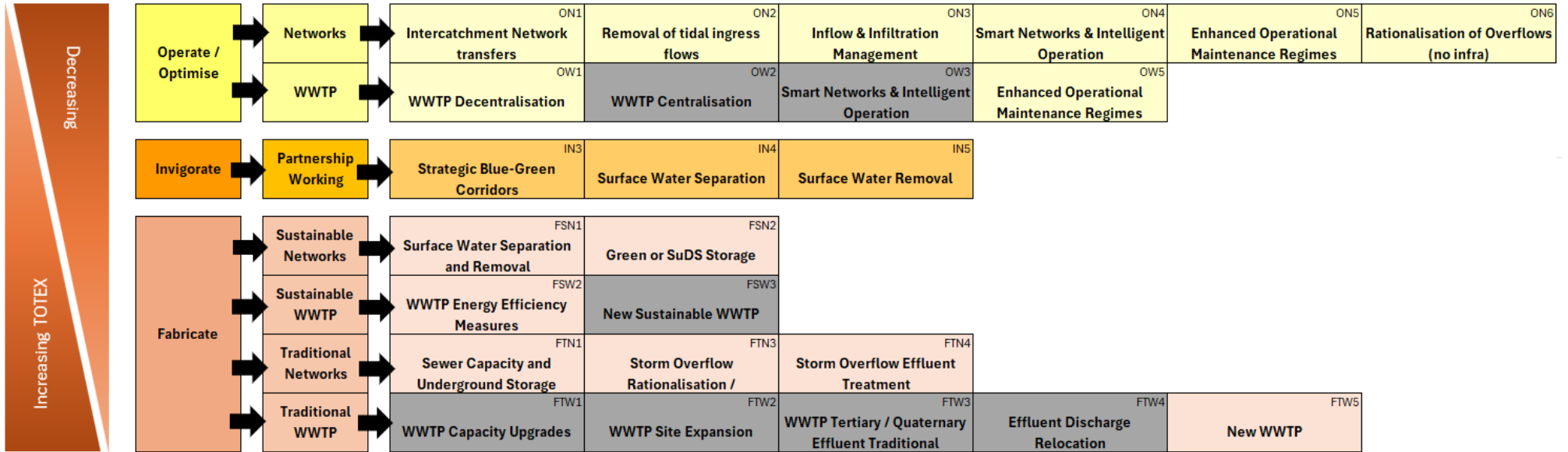


Figure 9-1: Residual effective interventions for Mutton Island. Boxes in grey have been discounted, while coloured boxes have been taken forward as viable interventions.

9.4.1.2. Athenry Agglomeration

Athenry WwTP, located approximately 22km east of Galway City, serves Athenry agglomeration which has a combined sewer network serving 6,600 PE. The treated effluent is discharged to the River Clarin (Clarinbridge_040) river waterbody. This waterbody is likely to be affected by reduced flows and limited assimilative capacity due to climate change. The River Clarin flows south-westwards until it meets the sea at Dunbulcaun Bay, which forms part of the Galway Bay Complex SAC and Inner Galway Bay SPA. Clarinbridge / Kinvara Bay shellfish area is located within Dunbulcaun Bay.

Athenry WwTP Constraints:

The site has a capacity of 9,500 PE, however, projected loads by 2080 will far exceed the site's current capacity. There is a risk that if housing development accelerates over the next 15 years at the rate specified in the RSES, the facilities capacity may be exceeded by 2030.

Compliance - The investigation into WwTP performance identified an immediate need for a resilience upgrade focused on enhanced nutrient removal, to ensure the plant remains compliant with its discharge licence while accommodating short-term growth. The ammonium and orthophosphate limits at this WwTP are particularly challenging and are representative of the sensitive nature of the receiving waterbody. Anticipated growth increases will drive the need to meet tighter environmental standards under the rUWWTD. There is a risk that the site will be unable to meet future discharge licence requirements.

Environment - The River Clarin is a sensitive karst environment and flow estimation in the river remains uncertain due to the complex geology and a lack of local data. The dilution available in the River Clarin is low and modelling indicates that the river flow may reduce with climate change, resulting in further reductions in assimilative capacity. Water quality modelling indicates that treatment standards for the WwTP in future would not be viable using existing known technologies, resulting in continued discharge to this receiving watercourse unviable in the medium to long term.

Interventions taken forward for Athenry WwTP:

In the short term:

- A resilience **upgrade** – developing existing assets on the site offers a viable intervention to accommodate the significant growth anticipated in the Athenry agglomeration in the short term. Beyond 2040 (or beyond 10,000 PE) the site is no longer a viable option due to treatment constraints and the limited assimilative capacity of the receiving waterbody. A new WwTP discharging to the same location will also not be viable and was screened out.

In the medium term:

- **WwTP decentralisation** beyond 2040 would manage the environmental risks from increased loadings at the site. Transferring the load from Athenry to an alternative regional facility is recommended to ensure long-term growth for the area, with the additional capacity to be provided by a **new WwTP**.

- The balance of loads between Athenry WwTP and any new regional WwTP will be determined based on the constraints of Athenry. Due to sensitivities in the receiving waters, the full **decommissioning of Athenry** would be the environmentally preferable option. By transferring load to a new regional facility with higher treatment standards, the environmental risk of discharging effluent into the River Clarin can be avoided.

Athenry Network Constraints:

There are two SWOs in Athenry, which are both terminal (positioned at the end of the network) SWOs at the WwTP. Assessment against the Procedures and Criteria in relation to SWOs, shows that both are at risk of not adhering to the criteria in the baseline position and in the future. Several interventions were discounted on the basis that they would not be effective – **inter-catchment network transfers, rationalisation of overflows or abandonment**, and **surface water separation** were discounted. There is no evidence of tidal ingress in this area, so this intervention was discounted.

Interventions taken forward for Athenry Network:

- Modelling sensitivity analysis identifies surface water management as a high-priority intervention - specifically, the removal of **storm water misconnections**. This approach targets direct stormwater ingress points within the area, as this approach has proven effective in reducing both the volume and duration of wastewater spills.
- Athenry has a high proportion of impermeable surfaces leading to greater run-off. Future development in the area will further contribute to the loss of more permeable surface. Several nature-based interventions - **Strategic Blue-Green Corridors** and **Green or SuDS Storage** – in addition to traditional approaches, such as **Sewer Capacity and Underground Storage Options**, have been carried forward for consideration to minimise the impact of intermittent discharges as the WwTP transitions to a WwPS.

9.4.1.3. Claregalway Agglomeration

The Claregalway agglomeration has a separate, foul-only network that currently serves approximately 2,408 PE²¹⁰. The WwTP has a capacity of 6,000 PE and treats wastewater using preliminary and secondary treatment processes. Final effluent from Claregalway WwTP discharges into the River Clare - Clare (Galway)_100 which holds a 'Poor' WFD Status (2019-2024) and is under review for existing pressures which are causing it to be 'At Risk' of not meeting WFD Objectives. Clare (Galway)_100 drains to Lough Corrib, which is part of Lough Corrib SAC. The WwTP has a capacity of 6,000 PE and treats wastewater using preliminary and secondary treatment processes. Growth projections show that there is a risk that the site will run out of capacity between 2040 and 2055 under the worst-case scenario.

Claregalway WwTP Constraints:

Compliance – Data from the past 5 years shows that the WwTP rarely exceeds its ELV for ammonia and orthophosphate and demonstrates full compliance with BOD and chemical oxygen demand requirements. The WwTP is currently considered compliant, and modelling indicates that it will remain compliant up to 2055. In 2055 through to 2080, the increase in load will require capacity upgrades to maintain quality standards.

Environment – Water Quality modelling demonstrates that treatment and discharge to the existing location will remain feasible through 2080 using presently available technologies. The River Clare has a high flow and provides high dilution to the WwTP effluent. There are no anticipated regulatory obligations linked to the rUWWTD at this site, due to the projected population remaining below 10,000.

Catchment Flood Risk Assessment and Management (CFRAM) indicates that the site falls partially within 1-in-10 year and 1-in-100-year fluvial plains, which may merit additional flood mitigation measures.

Interventions taken forward for Claregalway WwTP:

- **Decentralisation** or **Centralisation** were discounted as the site will be able to accommodate local growth up to 2055 and other agglomerations are not in proximity. Beyond 2055, two interventions to help support the increase in load - **WwTP Site Expansion** and **WwTP Capacity Upgrades** - have been carried forward.
- Based on the anticipated future size of the site, the need for **Tertiary/Quaternary Treatment** has been discounted. The need to **relocate effluent discharge** has been discounted based on current water quality standards.
- The rUWWTD sets out new energy neutrality requirements for all plants treating a load of 10,000 PE or above. The future capacity may not exceed this load towards the end of the 55 years, however, to support Irish Government's emissions targets and protect our environment, **WwTP Energy Efficiency measures** have been taken forward.

Claregalway Network Constraints:

²¹⁰ Uisce Éireann. 2024. Claregalway (D0543-01) Annual Report. Available at: [Annual Environmental Report 2024](#). Accessed: March 2024.

The collection system which conveys load to the WwTP was constructed in 2014 and was designed as a separate system. Minimal storm water enters the network upstream of the WwTP and as such there is no storm discharge or storage at Claregalway WwTP. There are no SWOs in the network.

Interventions taken forward for Claregalway Network:

There is an identified risk of infiltration ingress in the catchment, which should be investigated to determine if investment is required. No further investment needs were identified for the network over the period of the strategy (to 2080).

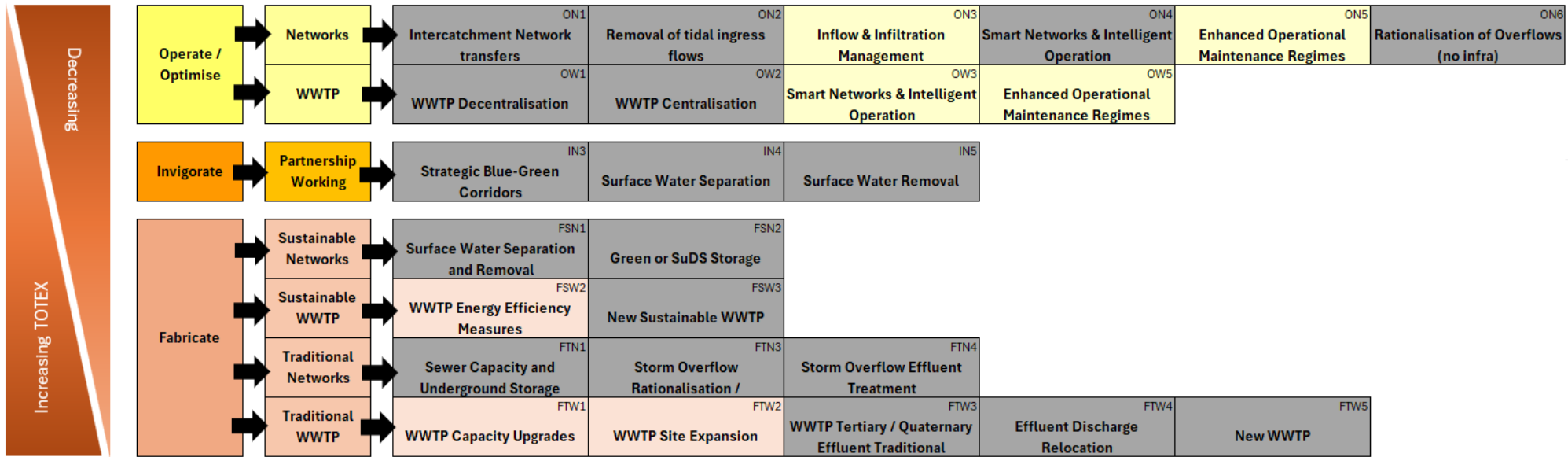


Figure 9-3: Residual effective interventions for Claregalway. Boxes in grey have been discounted, while coloured boxes have been taken forward as viable interventions.

9.4.1.4. Moycullen Agglomeration

Moycullen WwTP is designed to treat 4,000 PE. There is only one SWO in the Moycullen agglomeration, which is a terminal SWO at the WwTP. The WwTP discharges treated effluent to Ballycurke_010, which has a moderate (monitoring) WFD Status (2019-2024), and is 'At Risk' of not achieving WFD Objectives, with Urban run-off and Hydromorphology identified as pressures. Ballycurke_010 drains to Lough Corrib, which is part of Lough Corrib SAC.

Moycullen WwTP constraints:

- **Capacity** - Growth projections indicate that the site can expect an increase of 2,000 PE by 2080, which exceeds the current sites capacity. The upper bound population growth gradient for this agglomeration estimates that there is a risk that the WwTP will run out of capacity between 2040 and 2050 and the lower bound estimate indicates that capacity would be exceeded between 2060 and 2070.
- **Compliance** - The plant is designed to treat wastewater to an emission limit value (ELV) of 10, 35, and 1 mg/l for biological oxygen demand, suspended solids and ammonia, respectively. The site has an Orthophosphate standard of 0.5 mg/l. To support the Strategy, it is recommended to optimise and expand current treatment assets to establish a treatment profile capable of addressing both present and future requirements. The modelling conducted at Moycullen (including both network and river modelling) has low confidence; therefore, more comprehensive modelling assessments are advised to ensure no capacity upgrades are necessary prior to 2055 to achieve the desired ELV limits. The catchment's growth should be closely monitored with appropriate flow measurement systems implemented to assess WwTP performance throughout the Strategy's duration.
- Upstream and downstream of Moycullen WwTP, Ballycurke_010 is currently classified as failing to achieve Good Status under WFD standards for ammonia, BOD, and Orthophosphate. Attainment of WFD Good Status in Ballycurke_010 is contingent upon significant enhancements water quality. Given that the quality of the receiving water upstream of the WwTP already exceeds Environmental Quality Standards (EQS), there is insufficient assimilative capacity to determine an appropriate discharge quality. In such instances, a notionally clean upstream boundary has been adopted. The purpose of the "Notionally Clean" scenario is to facilitate the determination of ELV limits that would ensure compliance with target EQS necessary to satisfy WFD Good Status following upstream improvements. Additionally, the potential impact of the reedbed (post-final effluent sampling) on final effluent concentrations should be evaluated, and further data collection is required to ensure that final effluent measurements are representative for modelling purposes. The water quality model conducted sensitivity testing, which demonstrated that downstream concentrations in the canal are highly sensitive to the flow rate in the canal, the flow rate of water discharged from the WwTP, and the representation of the final effluent. A future modelling project is recommended to ensure the timing of any resilience upgrade, if required, and further details are available in Galway Wastewater Strategy *Appendix 4 - Impact on Water Quality*.

Moycullen WwTP Interventions

Projected growth and assessment of treatment efficacy have identified no needs prior to 2055. As growth is inherently uncertain, and the site capacity is relatively small, the inlet flow should be monitored going forward so that accurate flow and load can be captured.

- **Decentralisation** and **centralisation** were discounted as other sites and load centres are not near the site. Moycullen WwTP is a relatively modern asset and has sufficient headroom to 2055.
- **WwTP capacity upgrades and WwTP site expansion** are interventions carried forward. These will focus on meeting long-term hydraulic and biological loads emerging from local growth and adherence with ELV standards that require further detailed modelling.
- **Enhanced Operational Maintenance Regimes** are taken forward, to target proactive operation and maintenance programmes. Asset performance monitoring warrants consideration, particularly regarding the existing reed bed that currently serves as part of the tertiary treatment process.
- Based on growth projections, the WwTP is not expected to exceed a load of 10,000 PE by 2080. As such, the implementation of energy neutrality by 2040 under the rUWWTD, does not apply. However, **Energy Efficiency Measures** have been taken forward to explore options for enhancing operational efficiency, which will support national and EU net-zero emissions.

Moycullen Network constraints:

Moycullen is a low-risk catchment regarding network performance. There is only one SWO in the agglomeration, which is a terminal SWO at the WwTP. The SWO requires aesthetic screening, therefore there is a risk of non-adherence with the Performance and Criteria in relation to SWOs although this is classified as low risk as this is an aesthetic requirement. Sewer network modelling indicates that the SWO spills for less than 1 percent of the year and remains at this level for all growth scenarios. Spills are extremely infrequent and the impact can be considered as negligible. As the only SWO is a terminal SWO at the WwTP, multiple interventions which would not constitute an effective intervention were discounted. **Removal of tidal ingress flows** was discounted as the location is not tidal.

Interventions taken forward for Moycullen network:

Inflow and infiltration management has been carried forward as a viable intervention to manage capacity in the network over the future.

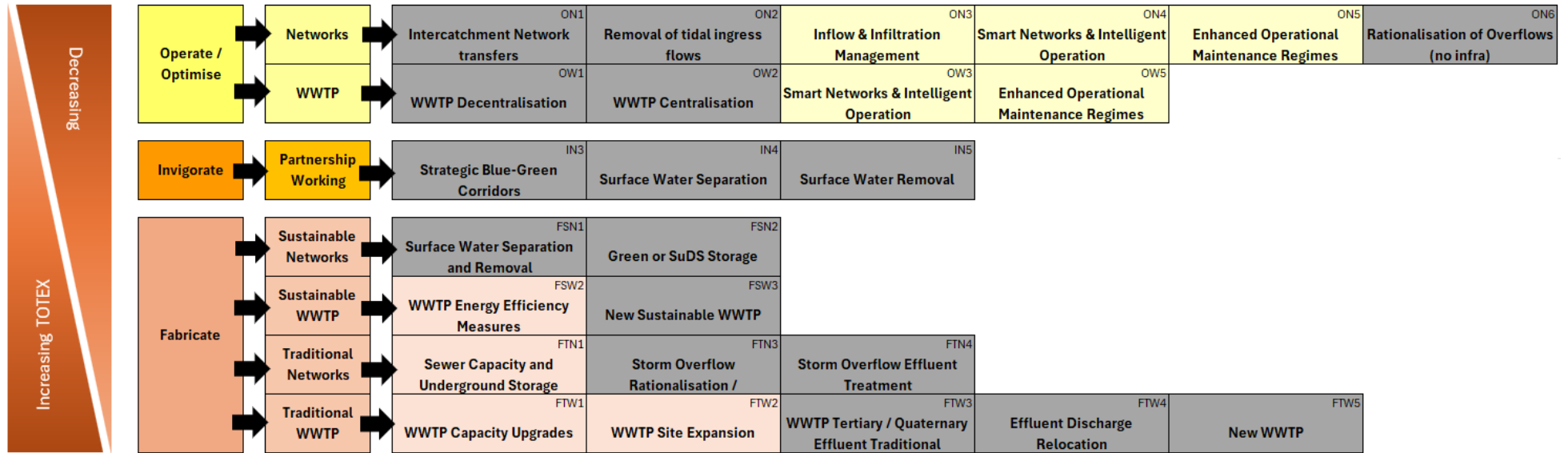


Figure 9-4: Residual effective interventions for Moycullen. Boxes in grey have been discounted, while coloured boxes have been taken forward as viable interventions.

9.5 Options Development

Following Agglomeration level primary screening, expansion for Mutton Island was discounted due to constraints on the site in relation to asset age, climate change and future legislation. Expansion for Claregalway and Moycullen were discounted due to the distance of each WwTP from the anticipated growth areas, the requirement for extensive conveyancing network and pumping, and limited assimilative capacity and environmental sensitivity of the receiving waters. Expansion for Athenry was discounted as its long-term resilience was considered low given the environmental sensitivity of the local receiving water environment. No WwTPs were identified as viable options for expansion, and WwTP expansion was therefore discounted from the list of interventions. **Therefore, the need for a new WwTP in the draft GWS Study Area was identified.**

From the regional distribution of projected growth scenarios, three broad indicative areas which offer scope for the development of a new WwTP were chosen. The three broad indicative areas include a western regional WwTP, a northern regional WwTP and an eastern regional WwTP (**Figure 9-5**). Determining the precise location of a proposed WwTP is not required at this stage; a detailed site selection process will be undertaken following the completion of the Strategy. These options are taken forward for further consideration.

For a WwTP of the required scale, tertiary and quaternary treatment will be required by 2045. The proximity of a WwTP to a suitable discharge point for treated effluent is a key limiting factor, and both marine and freshwater outfalls were considered. Modelling was used to inform the suitability of potential discharge locations and their potential environmental performance (see Galway Wastewater Strategy *Appendix 4 - Impact on Water Quality*). Marine outfalls were screened based on dilution performance, discharge depth, engineering complexity and regulatory and environmental constraints. The optimal outfall length and placement within broad zones to the east and west of Galway Bay were mapped to show proximity and positioning in relation to designated SACs and SPAs. Two potential locations – one east and one west – were taken forward for consideration. There is limited assimilative capacity for freshwater bodies to receive effluent from large WwTPs within the study area. Three surface waters within the study area were identified as having notable flow volumes with the possibility to accommodate treated effluent: the Corrib River, Clare River, and Lough Corrib. The screening of freshwater outfalls focused on the feasibility of maintaining compliance with regulatory standards, environmental risks and long-term resilience. Only the Corrib River was identified as a feasible freshwater outfall.

To support the expanded network, three potential outfall points have been identified: a west outfall, positioned west of Galway Bay (situated between Furbogh and Bearna); a River Corrib outfall into the River Corrib; and an east outfall east of Galway Bay - south of Roscam Point. These three outfall locations are considered alongside each of the three WwTP locations, to make up nine options.

Each regional WwTP was considered with the three identified discharge points to form a matrix of three agglomerations and three outfall variations, resulting in nine strategic options. All nine options are designed to cope with future capacity up to 2080 and comply with relevant legislation.

indicative locations have been chosen to support the assessment of options. These are shown in **Figure 9-6**, **Figure 9-7**, and **Figure 9-8** below.

Common features to all nine options are that load from part of Galway City West, Galway City East, Oranmore, Furbogh, Bearna and Athenry will be transferred to the new regional WwTP. A large proportion (approximately 80%) of Galway City West will continue to be treated at Mutton Island. Also common to all nine options is that the existing WwTPs at Moycullen and Claregalway will be retained to serve their respective local populations up to 2080, with necessary capital interventions as required to enhance capacity. Ongoing monitoring of growth against forecasts will inform the timing of relevant upgrades and further modelling work is recommended at Moycullen to remove uncertainty around model inputs to evaluate appropriate ELVs to ascertain whether any potential upgrades are required to be implemented prior to 2055. Also common to all nine options is the existing Athenry WwTP will be decommissioned and converted into a terminal pumping station. This new facility will collect flows from Athenry village, Athenry IDA, and the currently unserved area of Craughwell, transferring the combined load directly to a new Regional WwTP.

West WwTP (Options 1-3)

The Western Regional WwTP strategy centres on the comprehensive redirection of wastewater flows toward the west of Galway City. This strategic shift involves the consolidation of loads from key infrastructure hubs, specifically Athenry, Oranmore, and Galway City East. The existing pumping stations at Oranmore and Galway City West must undergo capacity upgrades to ensure they can adequately handle the increased incoming loads. While Galway City West flows will continue to be treated at the Mutton Island facility, outlying areas such as Bearna will be redirected to the new western regional WwTP.

North WwTP (Options 4-6)

The northern regional WwTP centres on the consolidation and redirection of wastewater flows to the north of Galway City. To facilitate this, several interventions are required. The existing WwPS at Oranmore will be upgraded to act as a primary hub for the eastern corridor, which includes Oranmore, as well as the previously unserved areas of Clarinbridge and Kilcolgan. These combined loads will then be transferred from the Oranmore WwPS to the new Northern Regional WwTP. The treatment strategy for the western corridors will continue to utilize the Mutton Island WwTP. Galway City West and Bearna will maintain their current flow paths toward Mutton Island. Part of the Galway City West (defined as west of the River Corrib) will need to be transferred to the Northern WwTP to ensure that there is sufficient headroom within the retained Mutton Island WwTP.

East WwTP (Options 7-9)

The proposed strategy focuses on the consolidation and redirection of wastewater flows to the east of Galway City. The existing WwPS at Oranmore will be upgraded to act as a primary hub for the eastern corridor, which includes Oranmore, as well as the previously unserved areas of Clarinbridge and Kilcolgan. These combined loads will then be transferred from the Oranmore WwPS to the new Eastern Regional WwTP. The treatment strategy for the western catchments remains centred on the Mutton Island WwTP. Galway City West and Bearna will maintain their current flow paths toward Mutton Island. To expand the reach of this system, a new rising main

will be installed to transfer loads from Furbogh into the Galway City West network, where they will ultimately be treated at the Mutton Island facility. Part of Galway City West (defined as west of the River Corrib) will need to be transferred to the Eastern WWTP to ensure that there is sufficient headroom within the retained Mutton Island WwTP.

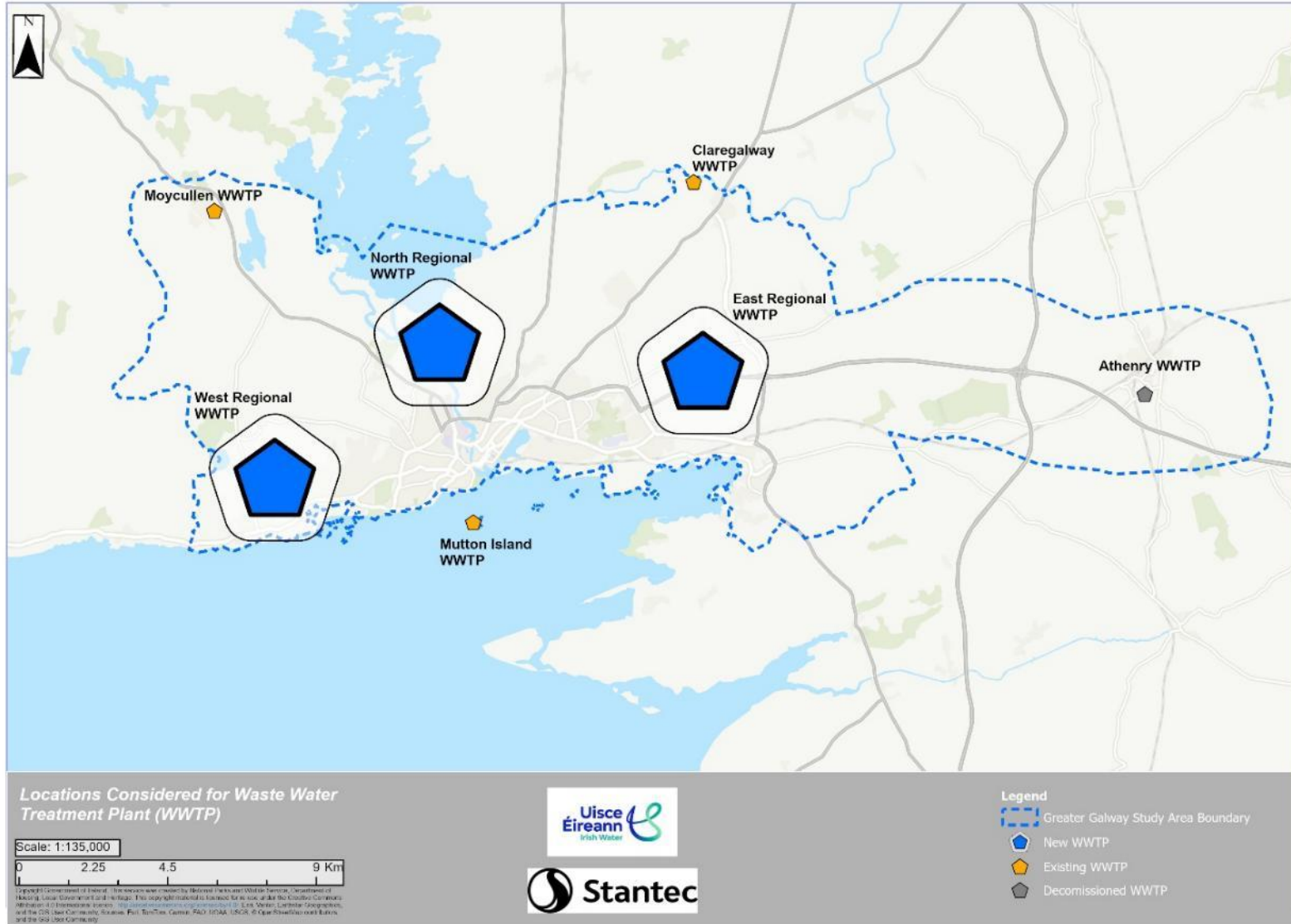


Figure 9-5: Broad indicative areas (west, north and east) for new WwTP location

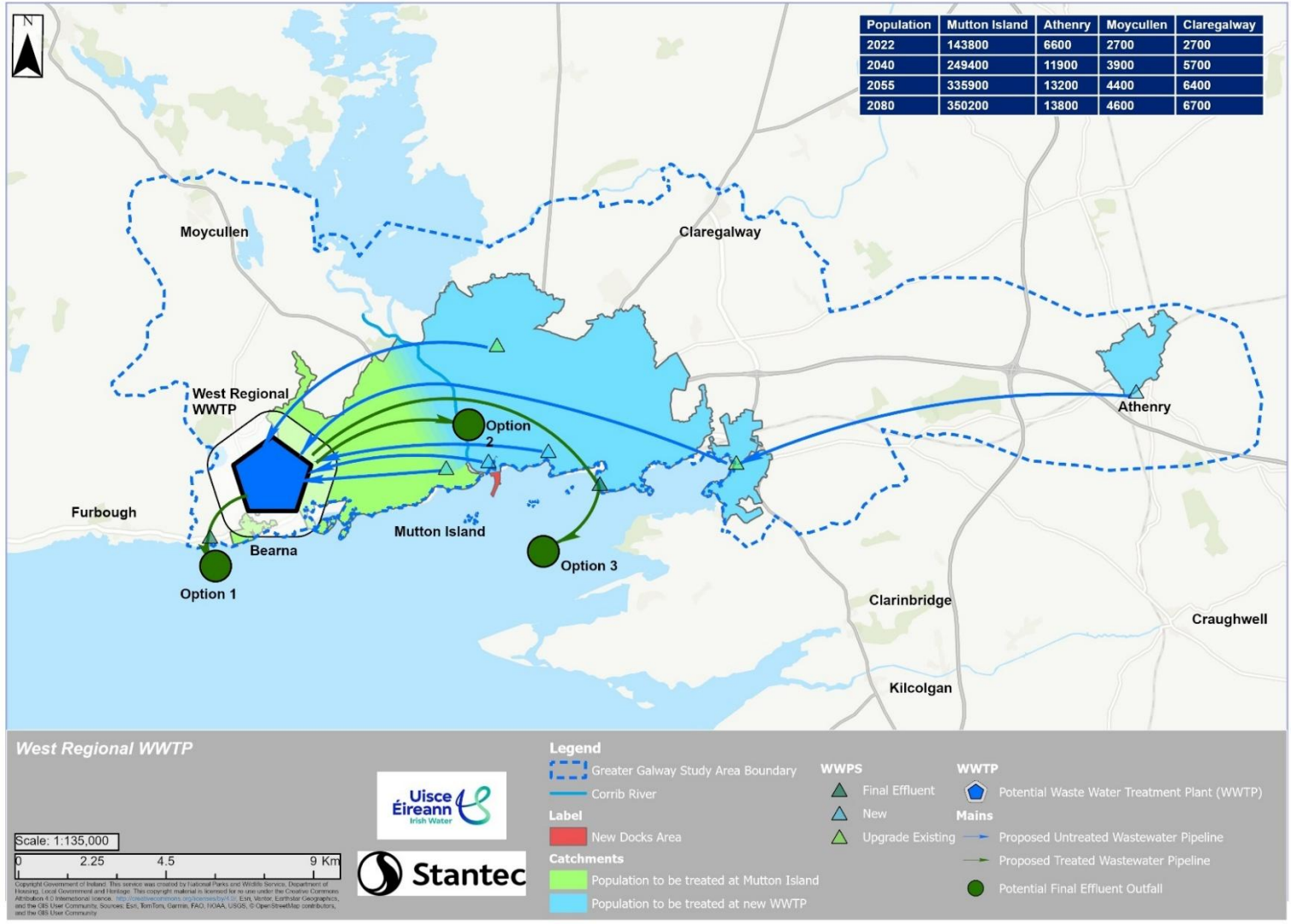


Figure 9-6: West WwTP (Options 1-3). Blue polygon is the broad indicative area for the West WwTP. Large green circles are the three indicative outfall (West, Corrib River, East) locations.

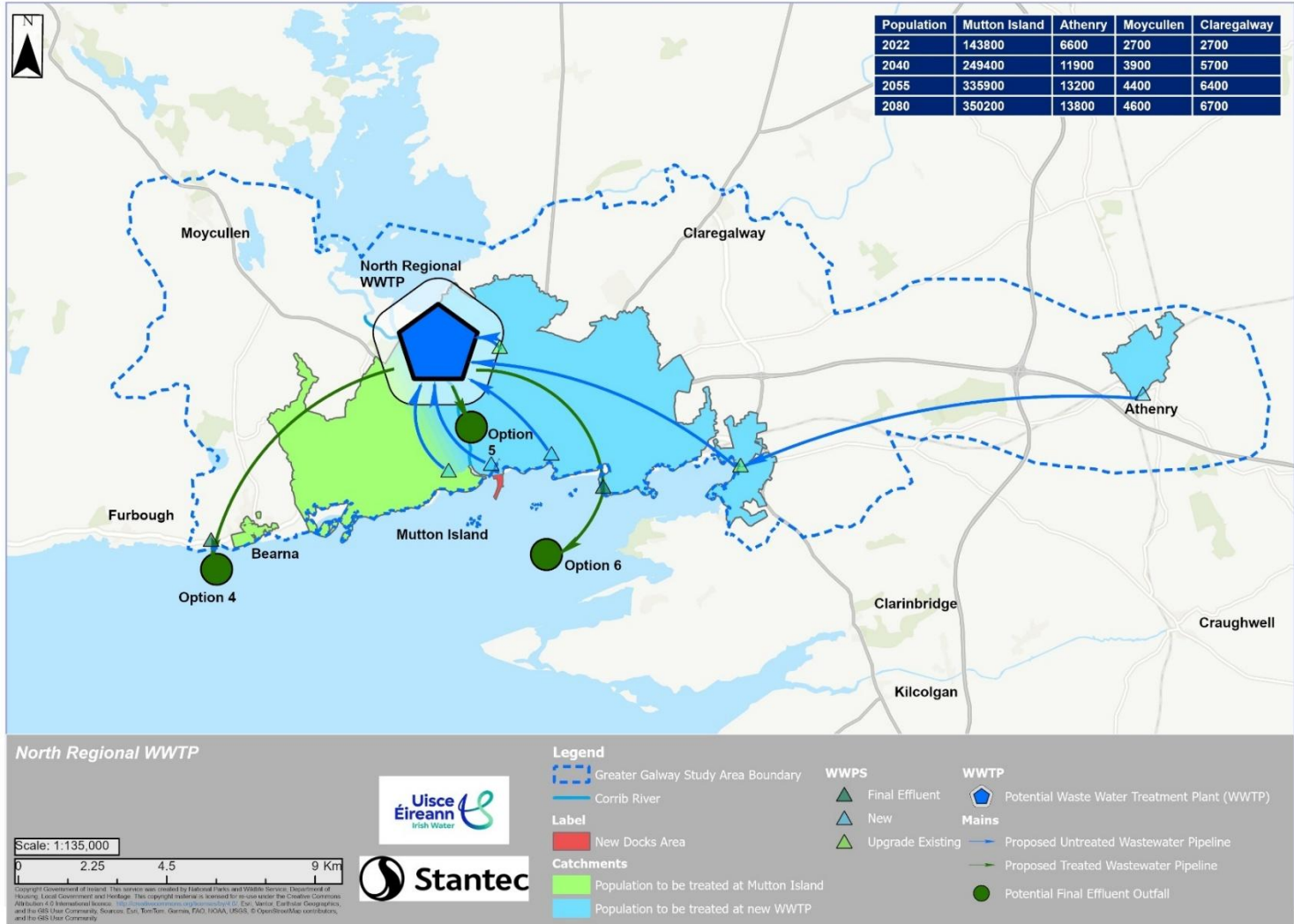


Figure 9-7: North WwTP (Options 4-6). Blue polygon is the broad indicative area for the North WwTP. Large green circles are the three indicative outfall (West, Corrib River, East) locations.

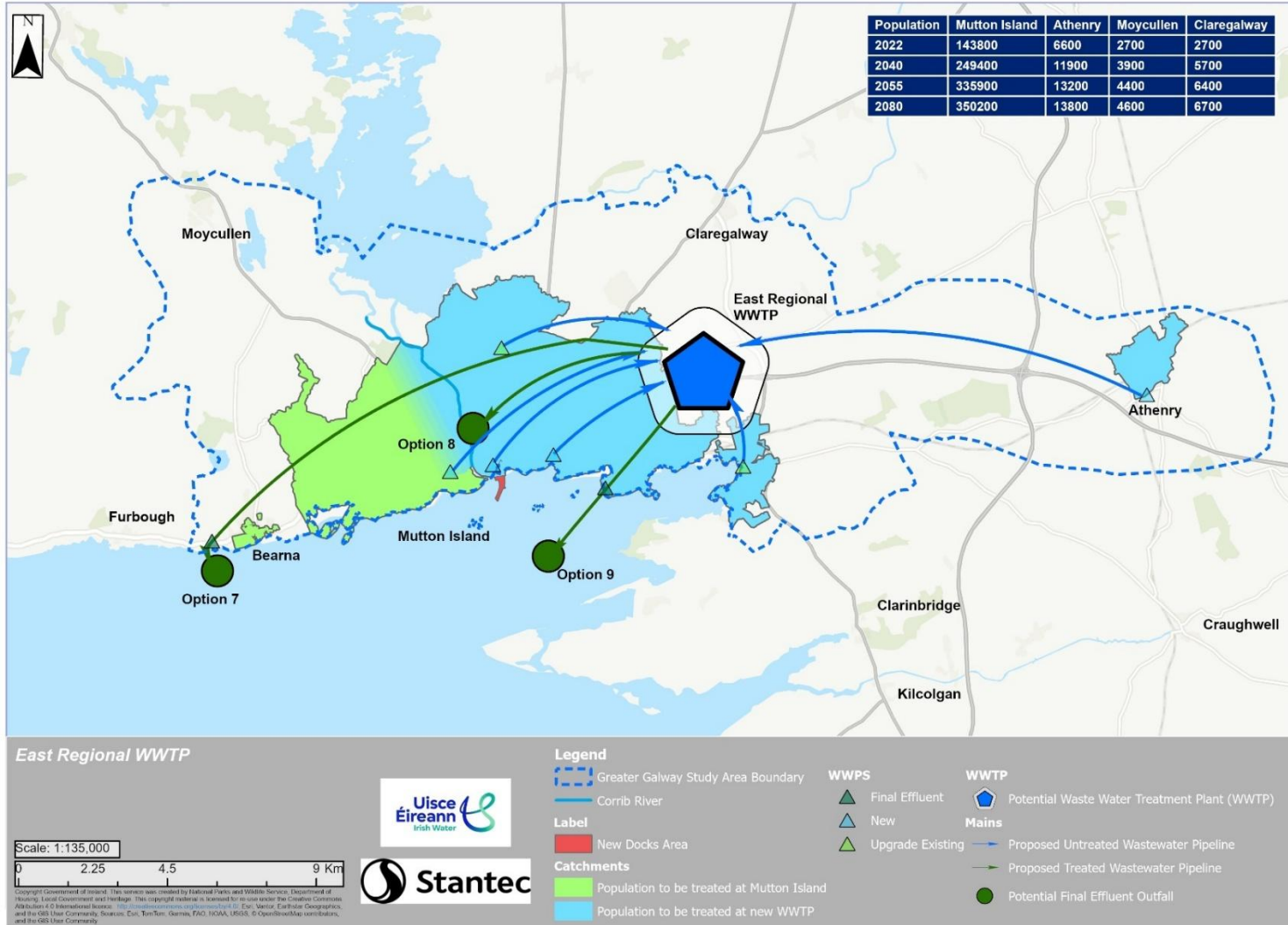


Figure 9-8: East WwTP (Option 7-9). Blue polygon is the broad indicative area for the East WwTP. Large green circles are the three indicative outfall (West, Corrib River, East) locations.

9.6 Fine Screening

The purpose of fine screening is to systematically evaluate and compare options/reasonable alternatives against the SEA Strategic Environmental Objectives (SEOs) to:

- Identify environmental strengths and weaknesses of each option
- Distinguish between options that perform well and those that do not
- Highlight any significant adverse effects or risks
- Support transparent and evidence-based decision-making
- Narrow down options for further consideration or selection

Fine screening was undertaken to assess the nine options in greater detail than the initial coarse screening stage. This process identified the potential for significant effects on the SEA topics and their associated SEOs which are outlined in **Section 7.2** of this report. The assessment was carried out on the basis that best practice construction methodologies would be implemented.

Fine screening was conducted on the nine options that were identified in the above sections, as per the criteria outlined in **Table 9-4** below.

Table 9-4: Fine screening criteria

Major Positive/ Beneficial	7	Plan approach / alternative is likely to make a considerable positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects.
Moderate Positive/Beneficial	6	Plan approach / alternative is likely to make a moderate positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects
Minor Positive/Beneficial	5	Plan approach / alternative has potential to provide a minor positive contribution to SEOs or improve likelihood of delivery of positive effects and reduce risk of adverse effects.
Neutral/Negligible Risk	4	Plan approach / alternative has negligible of contribution or conflict with SEOs or low risk of effects or uncertainty of effects.
Minor Risk	3	Plan approach / alternative has minor potential to conflict to a greater extent with SEOs or increase risk of adverse effects.
Moderate Adverse Risk	2	Plan approach / alternative has moderate potential to conflict to a greater extent with SEOs or increase risk of adverse effects
Major Adverse Risk	1	Plan approach / alternative has potential to conflict to a greater extent with SEOs or high risk of significant adverse effects.

9.6.1. Summary of Strengths and Constraints of each Option

The strengths and constraints in relation to SEA Topics and their SEOs of all nine options are outlined in detail in **SEA Environmental Report Appendix B** and are summarised below.

9.6.1.1. S1 West WwTP, West Outfall

The potential west WwTP and west outfall allows the shortest (c.600m) marine outfall. Treated effluent will be discharged into the Outer Galway Bay coastal waterbody, which has high ecological status and is likely to have good assimilative capacity. Placing a new WwTP to the west of Galway City is poorly aligned with projected growth, as only 18% of anticipated demand is expected to

originate in this area. The broad indicative area for the WwTP site has low flood risk, and the marine outfall reduces downstream flooding concerns. The broad indicative area for the WwTP and outfall are outside EU-designated sites, NHAs and pNHAs, with minimal interaction for this Option overall, except where pipes cross the Corrib River (SAC, drinking water, and salmonid river), which is likely to happen twice, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. Nonetheless, given the lack of a dispersion model during the development of the draft GWS, thorough and detailed modelling studies are necessary to confirm that no adverse impacts of the west outfall extend into protected areas. Groundwater in the broad indicative WwTP area is extremely vulnerable. The long pipeline from Athenry increases energy and material demands. Construction may cause temporary traffic disruption, impacts on tourism, landscape, and townscape, and has potential for archaeological finds.

9.6.1.2. S2 West WwTP, Corrib River Outfall

The potential west WwTP with a Corrib River outfall will discharge to the Corrib River - a salmonid watercourse, a drinking water source, and part of Lough Corrib SAC. The receiving waters then flow onward to the Corrib Estuary transitional waterbody, which is currently under review for potential pressures placing it at risk of failing to achieve its WFD objectives. Galway Bay Complex pNHA, Galway Bay complex SAC, and Inner Galway Bay SPA are located within the Corrib Estuary transitional waterbody. The broad indicative area for the west WwTP site has low flood risk, but the riverine outfall lies in a flood-prone area, potentially increasing local flood risk. Placing a new WwTP to the west of Galway City is poorly aligned with projected growth, as only 18% of anticipated demand is expected to originate in this area. It is likely that pipes will cross the Corrib River (SAC, drinking water, and salmonid river) twice, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. Groundwater in the broad indicative WwTP area is extremely vulnerable. Construction may have short term impacts on water quality, traffic disruption, noise, tourism, landscape, and townscape, although best practice methodology will be followed. Archaeological and cultural heritage sites along the Corrib River corridor are likely to be encountered. The outfall is in a highly visited tourist area, and there may be effects on tourism and recreation during construction.

9.6.1.3. S3 West WwTP, East Outfall

The potential west WwTP with an eastern outfall will discharge into the Inner Galway Bay north coastal waterbody, via a long (c. 3,500m) marine outfall. Placing a new WwTP to the west of Galway City is poorly aligned with projected growth, as only 18% of anticipated demand is expected to originate in this area. The broad indicative area for the west WwTP has low flood risk, and the marine outfall reduces downstream flooding concerns. Groundwater in the broad indicative area for the WwTP is extremely vulnerable. It is likely that pipes will cross the Corrib River (SAC, drinking water, and salmonid river) three times, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. The long pipeline and outfall increase energy demands, infrastructure needs, and construction material requirements. Construction will cause traffic disruption and temporary impacts on tourism, landscape, townscape, and seascape, and the long network route increases

the likelihood that archaeological and cultural heritage assets will be encountered. The outfall will pass through, and discharge into, sensitive habitats within Galway Bay Complex SAC, Inner Galway Bay SPA, and Galway Bay Complex pNHA, increasing the environmental footprint and there is a risk of direct habitat fragmentation and disturbance to these sites which have high ecological importance. There is a risk of impact to the Annex I habitats mudflats and sandflats not covered by seawater at low tide, reefs, and large shallow inlets and bays during construction of the eastern outfall. The construction of an indicative long (c. 3,500m) marine outfall in Galway Bay may present some maritime navigational considerations, and there may be interactions with the Galway Docks expansion project.

9.6.1.4. S4 North WwTP, West Outfall

The potential north WwTP with a western outfall will discharge into the Outer Galway Bay coastal waterbody, which has high ecological status and is therefore likely to have good assimilative capacity. The broad indicative WwTP area is located near Corrib Lower Lake and the River Corrib (SAC, salmonid water, drinking water source), however, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into the boundaries of designated sites. Groundwater in the broad indicative WwTP area ranges from moderate to extreme vulnerability. Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of wastewater would need to be transported across the Corrib River to the north WwTP. It is also likely that a pipeline to the west outfall will cross the River Corrib at least once, posing potential construction-phase water quality risks, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. The broad indicative WwTP area is centrally located between major growth areas, minimizing the need for duplicate infrastructure and long sewage transport, enhancing operational and hydraulic efficiency. The WwTP area lies within a high-risk flood zone, however, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. The western outfall follows the shortest marine route, minimizing landscape, townscape, and seascape impacts. The west outfall is outside EU-designated sites, NHAs and pNHAs, nonetheless, given the lack of a dispersion model during the development of the draft GWS, thorough and detailed modelling studies are necessary to confirm that no adverse impacts of the west outfall extend into protected areas. The more central northern location of the WWTP and its network route to the west outfall means that fewer heritage sites are likely to be encountered compared to alternative locations.

9.6.1.5. S5 North WwTP, Corrib River Outfall

The potential north WwTP with a Corrib River outfall will discharge treated effluent directly into the River Corrib - a salmonid river, drinking water source, and part of Lough Corrib SAC and pNHA. The receiving waters then flow to the Corrib Estuary transitional waterbody, which is currently under review for potential pressures placing it at risk of failing to achieve its WFD objectives. Galway Bay Complex pNHA, Galway Bay complex SAC, and Inner Galway Bay SPA are located within the Corrib Estuary transitional waterbody. The broad indicative area for the WwTP is located near Corrib Lower Lake and the River Corrib (SAC, salmonid water, drinking water source),

however, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into the boundaries of designated sites. Groundwater in the broad indicative WwTP area ranges from moderate to extreme vulnerability. The north WwTP is within a high-risk flood zone, however, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WWTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of wastewater would need to be transported across the Corrib River to the north WwTP, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. The broad indicative area for the WwTP is centrally located between major growth areas, minimizing wastewater transport, duplicate infrastructure, and pipeline length, and enhancing operational and energy efficiency. Construction may cause traffic disruption. Pipelines and the treated effluent outfall traverse a highly visited tourist area and areas with archaeological and cultural heritage sensitivity.

9.6.1.6. S6 North WwTP, East Outfall

The potential north WwTP with an eastern outfall will discharge treated effluent via a long (c. 3,500m) marine outfall into the Inner Galway Bay north coastal waterbody. The broad indicative WwTP site lies near Corrib Lower Lake and the River Corrib (SAC, salmonid water, drinking water source), however, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into the boundaries of designated sites. Groundwater in the broad indicative area of the north WwTP ranges from moderate to extreme vulnerability. Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WWTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of wastewater would need to be transported across the Corrib River to the north WwTP, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. The extended outfall length increases the risk of environmental effects, potential damage during construction or maintenance, and may impact sensitive habitats and species within Inner Galway Bay SPA, Galway Bay Complex SAC, and Galway Bay Complex pNHA, and Inner Galway Bay Ramsar site. There is a risk of direct habitat fragmentation and disturbance to these sites which have high ecological importance. There is a risk of impact to the Annex I habitats mudflats and sandflats not covered by seawater at low tide, reefs, and large shallow inlets and bays during construction of the eastern outfall. The broad indicative WwTP area is centrally located between growth areas, improving operational efficiency and reducing sewage transport, but is located within a high-risk flood zone, however, in line with best practice, comprehensive and site-specific flood risk assessments using climate models will be undertaken. Construction may affect traffic, highly visited areas, and underwater archaeological assets. The construction of an indicative long (c. 3,500m) marine outfall in Galway Bay may present some maritime navigational considerations, and there may be interactions with the Galway Docks expansion project.

9.6.1.7. S7 East WwTP, West Outfall

The potential eastern WwTP with a western outfall will discharge treated effluent into the Outer Galway Bay coastal waterbody, which has high ecological status and likely good assimilative

capacity. The west outfall follows the shortest marine route, minimizing construction impacts on seascape and reducing the likelihood of encountering underwater archaeological assets. The west outfall is outside EU-designated sites, NHAs and pNHAs, nonetheless, given the lack of a dispersion model during the development of the draft GWS, thorough and detailed modelling studies are necessary to confirm that no adverse impacts of the west outfall extend into protected areas. The broad indicative east WwTP area near Athenry and Oranmore would serve 82% of projected growth, thus minimising the pipeline length required from Athenry and reducing the energy required to pump raw sewage compared to other WwTP options. Groundwater in the broad indicative area for the WwTP is extremely vulnerable. It is likely that pipelines will cross the River Corrib (SAC, salmonid water, drinking water source) at least once. Legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WWTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of wastewater would need to be transported across the Corrib River to the east WwTP, meaning there would be a second Corrib River crossing, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. The broad indicative WwTP area has low flood risk, and the marine outfall reduces downstream flooding concerns. The east WwTP avoids EU-designated sites. Kiltullagh Turlough pNHA and Two-Mile Ditch Quarry geological site are nearby, however, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into the boundaries of designated sites. As several pipelines will pass through highly built-up and tourist-sensitive areas, disruptions to traffic and tourism are likely.

9.6.1.8. S8 East WwTP, Corrib River Outfall

The potential eastern WwTP with Corrib River outfall will discharge treated effluent into the River Corrib, which is an SAC, salmonid waterbody, and drinking water source. The receiving waters then flow onward to the Corrib Estuary transitional waterbody, which is currently under review for potential pressures placing it at risk of failing to achieve its WFD objectives. Galway Bay complex SAC, Inner Galway Bay SPA, and Galway Bay Complex pNHA are located within the Corrib Estuary transitional waterbody. Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WwTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of wastewater would need to be transported across the Corrib River to the east WwTP, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. The broad indicative east WwTP area near Athenry and Oranmore would serve 82% of projected growth, thus minimising the pipeline length required from Athenry and reducing the energy required to pump raw sewage compared to other WwTP options. Groundwater in the broad indicative east WwTP area is extremely vulnerable. Although the broad indicative WwTP area has low flood risk, the River Corrib outfall is within an area of flood risk, potentially increasing flood risk in the River Corrib catchment. The broad indicative east WwTP area avoids EU-designated sites. Kiltullagh Turlough pNHA and Two-Mile Ditch Quarry geological site are nearby, however, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into the boundaries of these geological sites. As several pipelines will pass through highly built-up and tourist-sensitive areas, disruptions to traffic and tourism are likely.

9.6.1.9. S9 East WwTP, East Outfall

The potential eastern WwTP with eastern outfall will discharge treated effluent into the Inner Galway Bay north coastal waterbody, via a long (c. 3,500m) outfall. The broad indicative east WwTP area near Athenry and Oranmore would serve 82% of projected growth, thus minimising the pipeline length required from Athenry and reducing the energy required to pump raw sewage compared to other WwTP options. The broad indicative area for the east WwTP site is not located near any EU-designated sites and has low flood risk, although groundwater in this area is extremely vulnerable. No pipelines will cross the Terryland River (Terryland_010). Future legislation relating to higher quality wastewater treatment may reduce the volume of wastewater that can be treated at Mutton Island WWTP. In this likely scenario, to accommodate future growth in the west of the city, it is likely that a portion of wastewater would need to be transported across the Corrib River to the east WwTP, however, adherence to best construction practices and the use of high-quality materials make the likelihood of associated environmental issues extremely low. The outfall into a marine environment reduces downstream flooding concerns. Construction and operation of the proposed effluent outfall location will be within Inner Galway Bay SPA, Galway Bay Complex SAC, Galway Bay complex pNHA, and Inner Galway Bay Ramsar site. There is a risk of direct habitat fragmentation and disturbance to these sites which have high ecological importance. There is a risk of impact to the Annex I habitats mudflats and sandflats not covered by seawater at low tide, reefs, and large shallow inlets and bays during construction of the eastern outfall. Kiltullagh Turlough pNHA and Two-Mile Ditch Quarry geological site are nearby the broad indicative area for the east WwTP, however, the potential WwTP location using UÉ's required site and route selection process should avoid direct intrusion into the boundaries of these geological sites. Construction may affect seascape visibility, bathing waters, and archaeological heritage. The construction of an indicative long (c. 3,500m) marine outfall in Galway Bay may present some maritime navigational considerations, and there may be interactions with the Galway Docks expansion project.

9.6.2. Outcome of Fine Screening

Table 9-5 below shows the fine screening outcome, with scores based on whether each option will have a major positive contribution (7) to a major adverse risk (1) to each SEA Topic and its SEO(s), as per **Table 7-2** in **Section 7.3**.

Water Environment (W1): Option 1 (west WwTP, west outfall), Option 4 (north WwTP, west outfall), and Option 7 (east WwTP, west outfall) scored highest, and were considered to have a Moderate Positive/Beneficial contribution to this SEA Topic. Option 3 (west WwTP, east outfall), Option 6 (north WwTP, east outfall), and Option 9 (east WwTP, east outfall) were assessed to provide a minor positive contribution to this SEA Topic. Option 2 (west WwTP, Corrib River outfall), Option 5 (north WwTP, Corrib River outfall), and Option 8 (east WwTP, Corrib River outfall) were determined to have negligible contribution or conflict with this SEA Topic and its SEO(s).

Population, Economy, Tourism and Recreation, and Human Health (P1): Option 4 (north WwTP, west outfall) and Option 1 (west WwTP, west outfall) scored highest for this SEA Topic and were considered to have a Moderate Positive/Beneficial contribution to this SEA Topic. All other

options scored neutral/negligible for this SEA Topic, aside from Option 3 (west WwTP, east outfall), which was considered to have minor potential to conflict with this SEA Topic and its SEO(s).

Climate Change (C1): Option 9 (east WwTP, east outfall) scored highest for this SEA Topic, as it was determined that it has potential to provide a minor positive contribution to this SEA Topic. Option 5 (north WwTP, Corrib River outfall) and Option 8 (east WwTP, Corrib River outfall) were considered to have minor potential to conflict with this SEA Topic, while it was assessed that Option 2 (west WwTP, Corrib River outfall) and Option 3 (west WwTP, east outfall) have moderate potential to conflict with this SEA Topic and its SEO(s).

Biodiversity (B1) Option 1 (west WwTP, west outfall), Option 4 (north WwTP, west outfall), and Option 7 (east WwTP, west outfall) were deemed to have a Moderate Positive/Beneficial contribution to this SEA Topic, while all other options were neutral for this SEA Topic and its SEO(s).

Material Assets (M1): All options were assessed to provide a minor positive contribution to this SEA Topic and its SEO(s).

Landscape, Townscape and Seascape (L1): It was determined that all options, aside from Option 3 (west WwTP, east outfall) scored neutral/negligible for this SEA Topic. Option 3 scored one point lower and was assessed to have minor potential to conflict with this SEA Topic and its SEO(s).

Cultural Heritage – Archaeological and Architectural (H1): Most options were assessed to have minor potential to conflict to a greater extent with this SEA Topic. Option 6 (north WwTP, east outfall) and Option 9 (east WwTP, east outfall) were determined to have moderate potential to conflict to a greater extent with this SEA Topic. Option 3 (west WwTP, east outfall) scored lowest for this SEA Topic, and it was considered this option had a high risk of adverse effects on this SEA Topic and its SEO(s).

Geology and Soils (G1) All options were determined to have minor potential to conflict with this SEA Topic, aside from Option 3 (west WwTP, east outfall). Option 3 was assessed to have moderate potential to conflict with this SEA Topic and its SEO(s).

Air Quality (A1): All options were assessed as neutral against this SEA Topic and its SEO(s).

Table 9-5: Outcome of Fine Screening

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
Water Environment (W1)	6	4	5	6	4	5	6	4	5
Population, Economy, Tourism and Recreation, and Human Health (P1)	5	4	3	5	4	4	4	4	4
Climate Change (C1)	4	2	2	4	3	4	4	3	5
Biodiversity (B1)	6	4	4	6	4	4	6	4	4
Material Assets (M1)	5	5	5	5	5	5	5	5	5
Landscape, Townscape and Seascape (L1)	4	4	3	4	4	4	4	4	4
Cultural Heritage – Archaeological and Architectural (H1)	3	3	1	3	3	2	3	3	2
Geology and Soils (G1)	3	3	2	3	3	3	3	3	3
Air Quality (A1)	4	4	4	4	4	4	4	4	4
Total Score	40	33	29	40	34	35	39	34	36

9.7 Final Options Assessment

All nine options achieved broadly similar scores, with the exception of Option 3, which scored notably lower (**Table 9-5** and **Figure 9-9**). This indicated that a range of alternatives could potentially meet the SEA objectives if appropriately designed and mitigated.

Excluding Option 3, the remaining options are broadly similar and demonstrate a comparable level of performance. On this basis, Options 1, 2, and 4–9 are considered to deliver significant improvements compared to the 'Do-Nothing' scenario in relation to the SEA Topics and their SEOs for the draft GWS and are therefore suitable for further consideration.

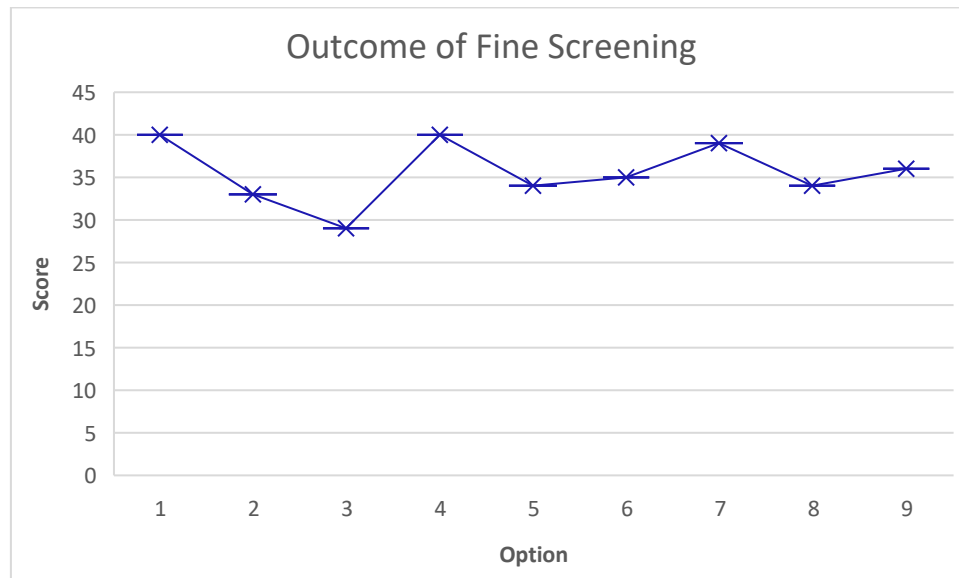


Figure 9-9: Scatterplot showing outcome of fine screening

The SEA, which assessed all nine options against the SEA Topics and corresponding SEOs played an important role in informing the selection of preferred options for the draft GWS. In parallel, all nine options were evaluated through a Multi-Criteria Decision Analysis (MCDA) as part of the optioneering process for the draft GWS. While the SEA and MCDA shared some comparable themes, they applied different assessment criteria. The SEA focused on environmental receptors and compliance with SEOs, whereas the MCDA placed greater emphasis on engineering feasibility, long-term resilience, deliverability, flexibility, and planning and regulatory risk. These differences explain variations in the outcomes of the two assessments.

The MCDA identified Option 9 (east WwTP with east outfall) and Option 7 (east WwTP with west outfall) as preferred options. When these options were assessed through the SEA, they were found to perform satisfactorily across all SEA Topics and to be consistent with the SEOs. Both options incorporate advanced wastewater treatment, which will be required by 2045, and they provide suitable solutions for the safe discharge of treated effluent.

In accordance with SEA requirements, the selection of Option 9 and Option 7 is accompanied by commitments to mitigation, monitoring, and phased implementation. Regulatory oversight by the Commission for Regulation of Utilities and the Environmental Protection Agency will ensure that environmental protections identified through the SEA are embedded throughout delivery and operation of the GWS.

10. Cumulative Effects Assessment

The EPA (2020)²¹¹ describes cumulative effects in SEA as “*effects on the environment that result from incremental changes caused by strategic actions together with other past, present, and reasonably foreseeable future actions. These effects can result from individually minor but collectively significant actions taking place over time or space.*”

The cumulative effects assessment for the draft GWS includes:

- Effects of measures/options proposed within a plan or programme – **intra plan effects**
- Effects between the measures/options proposed within the plan or programme and other projects, plans and programmes – **inter plan effects**

Cumulative effects result from a combination of two or more individual effects on a receptor. Such effects can occur because of plans, programmes, projects and other actions in the past, present and the reasonably foreseeable future. They can result from impacts that may be individually insignificant, but collectively significant. As per EPA guidance, potential cumulative effects have been integrated and considered throughout the SEA, and relevant environmental and social receptors have also been considered throughout. Cumulative effects assessment in SEA should focus on the key cumulative issues of climate change, water quality, flood risk, air quality, biodiversity and landscape, plus any other locally significant cumulative effects²¹².

For cumulative effects to occur, an overlap of temporal periods among impacts is required. For example, two strategic-level schemes being constructed at the same time could result in cumulative traffic disruption, while two schemes being operated over the same period and discharging to the same waterbody could result in cumulative impacts on water quality. Additionally cumulative effects can occur due to the combined loss or fragmentation of a particular habitat type. A precautionary approach has been taken for the cumulative effects assessment, which assumes that all options could be constructed and operated at the same time within each of the 2040-, 2055- and 2080-time horizons.

The assessment has considered the cumulative effects across all SEA topics to identify those interactions that are likely to generate significant effects. These are likely to be related to:

- **Biodiversity (B1):** Combined loss, fragmentation, or degradation of habitats (e.g. from land take or water quality changes), potentially affecting sensitive or vulnerable species
- **Water Environment (W1):** Cumulative impacts on water quality from multiple discharges to the same waterbody, or improvements from reduced discharges and enhanced treatment may impact surface water and groundwater WFD Status and Risk.

²¹¹ Environmental Protection Agency (EPA). 2020. Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment. Available at: [EPA Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment](#). Accessed: January 2026.

²¹² Environmental Protection Agency (EPA). 2020. Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment. Available at: [EPA Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment](#). Accessed: January 2026.

- **Population, Economy, Tourism and Recreation, and Human Health (P1):** Combined impacts from multiple construction activities occurring at the same time (e.g., noise, traffic, and disruption affecting community wellbeing).
- **Landscape, Townscape and Seascape (L1):** Multiple nearby options collectively altering landscape character or key views.
- **Cultural Heritage – Archaeological and Architectural (H1):** Repeated or overlapping impacts on the same heritage assets, including combined loss or disturbance of known and unknown archaeological remains.
- **Climate change (C1):** Total carbon emissions from the overall approach, alongside combined effects from other developments

10.1 Intra-Plan Cumulative Effects

These effects consider the plan’s policies or sub-components collectively²¹³. The intra-plan cumulative assessment considers potential interaction or combined effects across agglomerations for the 2040, 2055 and 2080 horizons. The actual timing of implementation will depend on detailed programming, but the assessment assumes a worst case where works might be undertaken at the same time if occurring within the same time horizon period. The plan (including the new WwTP) can be divided into five wastewater agglomerations, which is presented in **Table 10-1**.

Table 10-1: Wastewater Agglomerations in the draft GWS Study Area

Wastewater Agglomeration	Time Horizon	WwTP	Network Intervention
Moycullen	2040	Retain Localised Treatment	<ul style="list-style-type: none"> • No immediate needs
	2055	Potential Capacity Upgrade	
	2080	Retain localised treatment at increased capacity	
Claregalway	2040	Retain Localised Treatment	<ul style="list-style-type: none"> • No immediate needs
	2055	Potential Capacity Upgrade	
	2080	Retain localised treatment at increased capacity	

²¹³ Environmental Protection Agency (EPA). 2020. Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment. Available at: [EPA Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment](#). Accessed: January 2026.

Wastewater Agglomeration	Time Horizon	WwTP	Network Intervention
Athenry	2040	Transition from WwTP to wastewater pumping station (WwPS)	<ul style="list-style-type: none"> • Removal of storm water misconnections • Implement nature-based solutions • Increase sewer capacity and underground storage
	2055	Transfer load to New WwTP	
	2080	Treat load to New WwTP	
Mutton Island/Galway City	2040	Reduce Capacity	<ul style="list-style-type: none"> • Surface water separation to be explored • Collaborating with local authorities to implement SuDS and remediate storm-water misconnections, • Supported by Smart Networks and Intelligent Operation
	2055	Operate at reduced capacity	
	2080	Operate at reduced capacity	
New WwTP (Option 7 / Option 9)	2040	Construction	
	2055	New WwTP in Operation	
	2080	New WwTP in Operation	

It is likely that other surrounding settlements such as Furbogh, Kilcolgan, Clarinbridge and Craughwell - which do not currently operate wastewater assets, could be accommodated within the modular capacity of the proposed WwTP. Their potential inclusion would not alter the overall strategic direction or outcomes of the draft GWS and would therefore be more appropriately addressed through standard business-as-usual feasibility processes for integration. As these settlements are geographically separate, with no spatial overlap or functional interconnectivity

with other wastewater agglomerations, there is limited potential for cumulative effects to arise. Hence, they have not been considered further within the cumulative effects assessment.

Table 10-2 assesses interactions between wastewater agglomerations where construction, operation or both phases associated with the preferred options may have cumulative negative or positive effects on the SEA Topics. This includes interactions where:

- Preferred options may have temporary impacts on population receptors from construction works including wastewater transfer mains and wastewater network improvements, e.g., construction traffic, commuting delays
- Potential beneficial effects by serving new parts of an agglomeration with wastewater services leading to commercial and residential developments
- Preferred options may result in discharges or changes to common waterbodies resulting in either beneficial (due to higher treatment standard leading to improved biodiversity and better amenity areas) or adverse effects

Table 10-2: Interactions between Wastewater Agglomerations and Preferred Options

Wastewater agglomerations	Moycullen	Claregalway	Athenry	Mutton Island/ Galway City	New Regional WwTP
Moycullen					
Claregalway					
Athenry					
Mutton Island/ Galway City					
Key	Construction phase (Traffic)			Operation phase	
	Construction and Operation			No cumulative effect	

Any potential interactions amongst wastewater agglomerations that were identified in Table 9.2 are related to the SEA objectives and presented in **Table 10-3**.

Table 10-3: Wastewater agglomerations potential cumulative effects

Wastewater Agglomeration	SEA Topic								
	W1	P1	C1	B1	M1	L1	H1	G1	A1
Moycullen and Claregalway	+			+					
New WwTP and Athenry	+	+/-	-	+					-
New WwTP and Mutton Island/ Galway City	+	+/-	-	+					-
All agglomerations combined	+		+/-	+					
Key		No interaction or negligible cumulative effects			-	Potential for adverse cumulative effects			
	+	Potential for beneficial cumulative effects			+/-	Potential for mixed beneficial and adverse effects			

10.1.1. Construction

As each WwTP serves a different agglomeration, they are not located close to each other. As a result, construction works associated with the WwTPs are unlikely to give rise to significant combined effects, even if undertaken over the same period. However, there is potential for transfer pipeline construction and network improvements to result in some combined effects where works occur concurrently within the same area. This may lead to temporary disturbances, such as traffic disruption. This has been identified in relation to the new WwTP and Athenry / Galway City, where transfers are proposed from the Athenry WwPS and the Galway network to the WwTP. Nevertheless, construction activity would also be expected to generate positive effects by supporting the local economy.

There are combined effects in relation to climate change and air quality arising from construction activity or traffic. These include embodied greenhouse gas emissions associated with materials required for plant upgrades, new infrastructure and pipelines, as well as emissions from construction activities and diesel-powered plant and equipment. Short-term air quality impacts, such as fugitive dust emissions, and noise nuisance may also occur during construction.

Mitigation measures recommended in **Section 11** in relation to construction environmental management would address potential combined construction effects.

10.1.2. Operation

Operational cumulative effects include additional combined positive effects such as when WwTPs are optimised so that their wastewater discharges achieve compliance, or when WwTPs are decommissioned and effluent is not discharged into sensitive watercourses. Future interventions for both Moycullen and Claregalway include improving treatment and effluent discharges to downstream waterbodies (i.e. Lough Corrib), with a combined positive effect on the water environment and biodiversity.

It is anticipated that a positive effect on the water environment and biodiversity will arise from the combined effect of the new WwTP and Mutton Island/Galway City. The upgrade of Mutton Island WwTP will ensure that the site can maintain compliant with its discharge licence and seeks to maximise the use of existing assets. Beyond 2040, a staged transfer of load to the new WwTP will be undertaken to ensure the long-term viability of Mutton Island.

The existing Athenry WwTP will be converted into a new terminal WwPS. The facility will collect wastewater flows from Athenry village and Athenry IDA lands and will transfer the combined load directly to the new Regional WwTP. At present, treated effluent from the Athenry WwTP is discharged by gravity to the River Clarin (Clarinbridge_040) river waterbody, which has a WFD status (2019-2024) of 'Poor' (monitoring) and is 'At Risk', with urban wastewater an identified pressure. The River Clarin flows south-west through a sensitive karst environment before entering Dunbulcaun Bay, which forms part of the Galway Bay Complex SAC and the Inner Galway SPA. Following the conversion of the Athenry WwTP to a WwPS, treated effluent discharges to the River Clarin will cease. As a result, a significant combined positive effect on the water environment and biodiversity is anticipated.

Overall, the combined effect of the draft GWS across all wastewater agglomerations is expected to deliver significant improvements in water quality and aquatic ecology within Galway Bay. These improvements will be achieved through WwTP decommissioning and transfer, a new WwTP with enhanced wastewater treatment and discharge standards which will meet more stringent compliance requirements, network upgrades, and improved storm water overflow (SWO) compliance, thereby reducing flooding and pollution incidents. These improvements combine to support objectives for SEA Topics, including biodiversity (B1), the water environment (W1), and population and human health (P1).

Due to population growth, the combined effect of operational greenhouse gas emissions could increase. However, this will be substantially mitigated through increased energy efficiency and use of renewable energy sources. The approach to be developed for implementation is set out in the draft GWS. The draft GWS is also assessed as having a likely positive effect on resilience of the environment to climate change by supporting water quality improvements taking account of climate change effects. The improvements to the network and to SWOs will reduce the incidents of sewer overflow and untreated discharges, having positive effects on the water environment.

10.2 Inter-Plan Cumulative Effects

In addition to within draft GWS combined effects, potential combined and cumulative effects with the implementation of other plans have been assessed. **Table 10-4** presents cumulative assessment between draft GWS and other plans and programmes.

Table 10-4: Potential Cumulative Effects of the draft GWS against Strategic Environmental Objectives (SEOs)

Policy, Plans and Programmes	W1	P1	C1	B1	M1	L1	H1	G1	A1
Regional Water Resources Plan – North West (UÉ, 2023)	+	+	+/-	+/-		+/-		+/-	
Water Services Strategic Plan (2050) Uisce Éireann	The GWS is a direct response to Actions 3.1 and 3.2 under Strategic Aim 7 of the Water Services Strategic Plan (WSSP) to 2050, which require the development of a wastewater strategy framework and integrated urban wastewater management plans. As the GWS is an implementing strategy derived from the WSSP and does not introduce additional strategic direction beyond those already considered, it is not expected to contribute to cumulative effects with the WSSP.								
National Wastewater Sludge Management plan (2016)	+/-		+/-		+/-			+	+/-
Uisce Éireann Biodiversity Action Plan (Uisce Éireann, 2021)	+			+					
Climate Action Plan 2025			+/-						
National Energy and Climate Plan 2021-2030			+/-						
National Adaptation Framework 2024			+						
Water Quality and Water Services Infrastructure Sectoral Adaptation Plan 2025	+		+						
Water Action Plan 2024 (A River Basin Management Plan (RBMP) for Ireland)	The RBMP provides the statutory water quality objectives and programme of measures that directly inform the GWS. As the GWS is a tiered strategy designed to implement RBMP objectives at a local level, it does not introduce additional strategic direction and is not expected to result in significant cumulative effects in combination with the RBMP.								

Policy, Plans and Programmes	W1	P1	C1	B1	M1	L1	H1	G1	A1
National Planning Framework – First Revision (2025)	The National Planning Framework recognizes that the key future growth enablers for Galway include the delivery of the GWS. The GWS represents a tiered implementation of these national policy objectives and does not introduce additional or conflicting strategic interventions. Accordingly, the GWS is not expected to contribute to significant cumulative effects in combination with the National Planning Framework.								
Project Ireland 2040 National Marine Planning Framework (2021)	Wastewater Treatment and Disposal Policies 1 and 2 of the National Marine Planning Framework are important drivers of the GWS. The GWS represents a tiered implementation of these national policy objectives and does not introduce additional or conflicting strategic interventions. Accordingly, it is not expected to contribute to significant cumulative effects in combination with the National Marine Planning Framework.								
Ireland’s 4 th National Biodiversity Action Plan 2023-2030	+		+	+					
National Development Plan Review 2025	+/-	+	+/-	+/-	+/-	+/-	+/-	+/-	+/-
Water Services Policy Statement (WSPS) 2024-2030	The WSPS is a high-level policy driver for the GWS and is not a parallel or independent plan being implemented alongside it. The GWS is not considered to give rise to cumulative effects with the WSPS.								
Healthy Counties and Cities (2023)		+							
Our Rural Future: Rural Development Policy 2021-2025	+	+							
National Waste Management Plan for a Circular Economy - Ireland’s National Waste Policy 2024-2030	+/-	+	+	+/-				+/-	+/-
Whole of Government Circular Economy Strategy 2026 - 2028 Accelerating Action (2026)			+					+/-	
Heritage Ireland 2030		+					+/-		
Northern and Western Regional Spatial and	According to the Galway County Development Plan (2022), the RSES for the Northern and Western Regional Assembly identifies the delivery of the Galway East Main Drainage Scheme as essential to enabling the growth model set out in								

Policy, Plans and Programmes	W1	P1	C1	B1	M1	L1	H1	G1	A1
Economic Strategy 2020-2032 (RSES) (Northern and Western Regional Assembly, 2020)	the RSES. The Galway East Main Drainage Scheme is being progressed by UÉ as part of the Greater Galway Area Strategic Drainage Study. In this context, the present study forms part of the implementation of the RSES-led strategic framework and does not constitute an additional or separate plan or programme. Accordingly, the GWS is not expected to give rise to significant cumulative effects in combination with the RSES.								
Wild Atlantic Way Regional Tourism Development Strategy 2023-2027	+	+			+/-				
Catchment Flood Risk Assessment and Management Programme (CFRAM)	+		+						
Flood Risk Management Plan (Corrib River Basin, Galway Bay North River Basin, Galway Bay South East River Basin) 2018	+		+						
Groundwater protection Schemes	No potential interaction identified								
Galway County Development Plan 2022-2028 (Galway County Council, 2022)	According to the Galway County Development Plan 2022–2028, Policy Objective WW3 relating to the Greater Galway Area Strategic Drainage Study seeks to accelerate and support the delivery of the Strategic Drainage Study and its associated solutions, as identified in the RSES. Policy Objective WW3 specifies that this is to be progressed in collaboration with the Department of the Environment, Climate and Communications, UÉ and Galway City Council. In this context, the present study represents a direct mechanism for implementing the objectives of the Galway County Development Plan and the wider RSES framework, rather than a separate or competing plan or programme. As such, the GWS is not expected to give rise to significant cumulative effects.								
Galway City Development Plan 2023-2029 (Galway City Council, 2025)	According to the Galway City Development Plan (GCDP), Policy 9.3 (Water Services) supports and seeks to liaise with UÉ on the provision of a sustainable and effective wastewater drainage, collection, and treatment system capable of meeting the existing and future needs of domestic, commercial, and industrial users within Galway city and the MASP area. The Plan further notes that previous proposals for the provision of a Galway East Main Drainage Wastewater Treatment Plant will be revisited as part of this strategic approach. In this context, the present study represents a direct means of implementing the objectives of the GCDP rather than a separate or standalone plan or programme. As such, it is not expected to give rise to significant cumulative effects.								

Policy, Plans and Programmes	W1	P1	C1	B1	M1	L1	H1	G1	A1
Galway City Climate Action Plan 2024-2029 (Galway City Council, 2024)			+/-						
Galway County Local Authority Climate Action Plan 2024 - 2029 (2024)			+/-						
Galway City Biodiversity Action Plan 2025-2030	+	+		+/-					
Galway City Heritage Plan 2025-2030							+/-		
Galway County Heritage and Biodiversity Plan 2024 - 2030 (2024)	+	+		+/-			+/-		

10.3 Summary of Inter-Plan Effects

There is potential for both negative and positive combined and cumulative effects between the draft GWS and plans supporting growth and infrastructure development. There could be negative impacts from construction and land take on biodiversity, landscape, cultural heritage and geology and soils but also positive impacts related to measures to protect the environment and provide sustainable development which the draft GWS options support. The potential negative construction effects identified can be addressed through the standard construction environmental management measures proposed (see **Section 11**).

Potential mixed positive and negative impacts were identified with Uisce Éireann’s NWRP Regional Water Resource Plan for the North West. **Figure 10-1** shows the preferred water resource approach in the GMA²¹⁴. There are beneficial effects to water quality from removing or improving WwTPs. However, where WwTPs remain upstream of abstractions for drinking water, these will need to be considered in the relevant Drinking Water Safety Plans. Risks will need to be assessed under the rUWWTD to determine the need for Quaternary treatment at the WwTP. Potential negative effects identified relate to possible combined construction impacts where works are concurrent and in the same area, however with standard planning and construction management approaches, these effects are likely to be minor and short term.

²¹⁴Uisce Éireann, 2023. Regional Water Resources Plan North West. Available at: [Regional Water Resources Plan - North West | Strategic Plans | Uisce Éireann \(formerly Irish Water\)](#). Accessed March 2026.

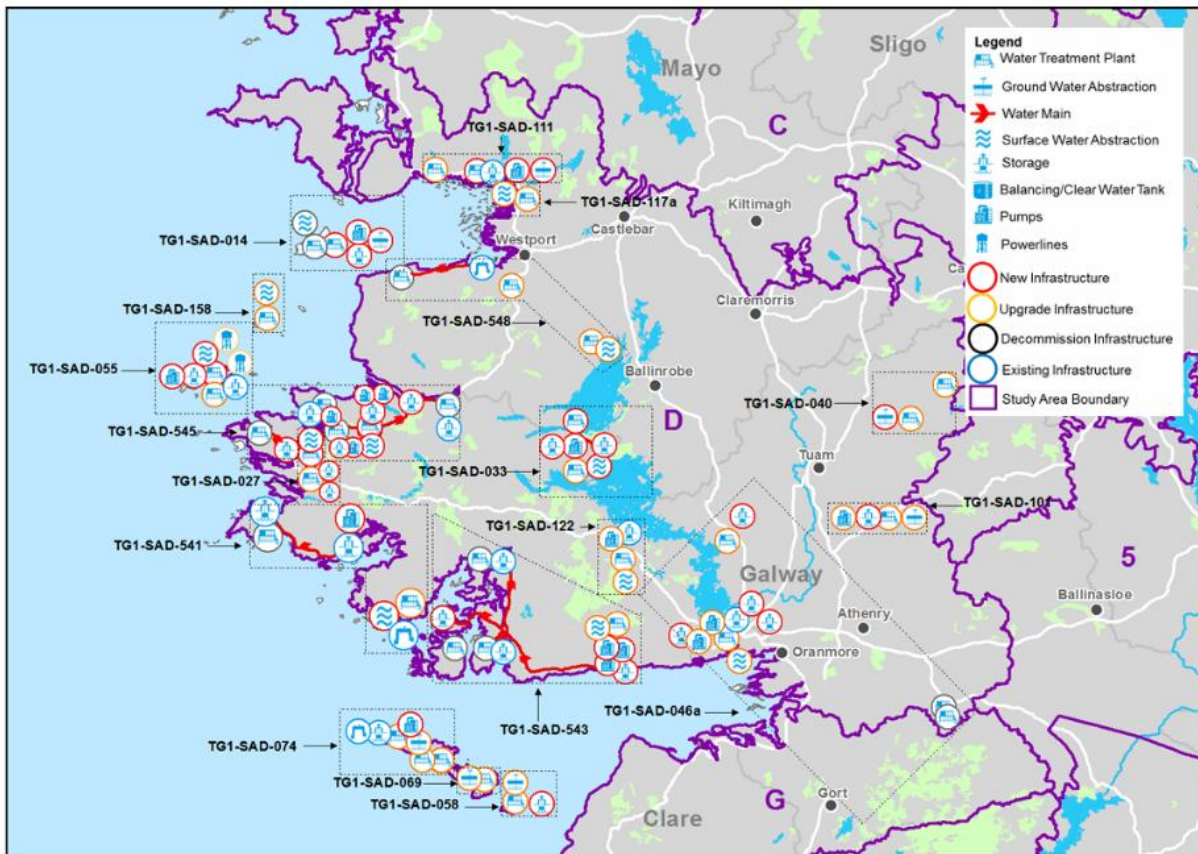


Figure 10-1: Preferred Approach for Uisce Éireann's NWRP Regional Water Resource Plan for the North West

10.4 Summary of the Draft GWS Natura Impact Statement

Avoidance and/or mitigation of adverse impacts to European Sites has been integrated in the optioneering phase of the draft GWS, and alternative options have been considered. As the draft GWS developed, options that sought to improve overall water quality or that avoid effects to European Sites were subject to MCDA. The options brought forward from the MCDA were Options 7 (East WwTP, West outfall) and 9 (East WwTP, East outfall). Both Option 7 and Option 9 were assessed in an NIS to determine whether they could result in likely significant effects to European Sites.

The NIS determined that the draft GWS had potential to cause significant adverse effects to eleven European sites. Nine potential pathways of effect were identified and assessed in relation to the draft GWS, including:

- Habitat loss – temporary
- Habitat loss – permanent
- 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 Alien Species

- Disturbance of species
- Mortality

In-combination effects with other Plans and Projects were assessed within the NIS. Based on the NIS, incorporating the avoidance and mitigation measures detailed in the NIS, adverse effects on the integrity of the European Sites are not anticipated at plan-level, alone or in-combination with other Plans or Projects. In line with the Habitats Directive, consent for the proposals arising from the GWS cannot be granted unless the prerequisites of the Habitats Directive are met. Therefore, projects arising from the plan would require environmental assessment, including project-specific screening, avoidance, mitigation measures or alternative solution assessment, where necessary.

11. Mitigation and Monitoring

Under the SEA Directive, Annex I(i) requires the Environmental Report to set out how the significant environmental effects of a plan or programme will be monitored. Article 10 requires that this monitoring is carried out after adoption to identify unforeseen adverse effects and enable corrective action. Monitoring responsibilities, including frequency of monitoring, must be clearly identified and defined, utilising existing monitoring arrangements where appropriate. The frequency of reporting on the results of the monitoring programme must be specified. The monitoring programme must address significant gaps identified in the baseline data. Provisions must be made to produce regular monitoring reports during the period. Provisions to make the results and interpretation of the monitoring programme available to the designated environmental authorities and the public must be made.

Mitigation is addressed in Article 5(1) and Annex I(g) of the SEA Directive. Article 5(1) requires the SEA Environmental Report to identify, describe and evaluate likely significant environmental effects, while Annex I(g) specifically requires the inclusion of measures envisaged to prevent, reduce and, as fully as possible, offset significant adverse effects. These mitigation measures must be set out in the Environmental Report and considered before the plan or programme is adopted. Responsibilities for responding to any significant negative environmental effects of implementation must be clearly defined.

Cumulative impacts are caused by many actions and can only be addressed through many actions and require cumulative mitigation. Although plan-makers can only influence what is in their own plan, a plan may require action (e.g., mitigation or monitoring) by a wide variety of stakeholders. Data is often lacking on receptors' capacity to accommodate change, and on the likely impact of other actions. Relevant other plans may not be agreed within the time scale of the plan being assessed. Therefore, a precautionary approach may be needed, and mitigation and monitoring are a key part of this²¹⁵.

In addition to the standard mitigation measures, additional mitigation measures and further study requirements have been identified for the draft GWS. Where options require Environmental Impact Assessment (EIA) and planning permission, mitigation will be identified through this detailed assessment and approval process. For smaller scale development, mitigation will be identified through Appropriate Assessment, environmental review, and application of good practice guidance. The Monitoring Plan outlined in this chapter is required to meet SEA regulations and it will provide a basis for developing Monitoring Plans for the study area.

11.1 Mitigation

Mitigation measures have been identified to reduce the impact of a significant effect, or to prevent the significant effect from occurring. Most construction activities undertaken as part of the GWS are regular construction activities for Uisce Éireann, such as rehabilitating sewers, increased sewer

²¹⁵ EPA, 2020. [EPA Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment](#). Accessed January 2026.

or infrastructure capacity and improvements at wastewater treatment works. Therefore, protocols and procedures for these activities are already in place and are expected to remain in place alongside the responsible operation of wastewater assets. The implementation of these reasonable measures is assumed when assessing impacts and is not repeated here. **Table 11-1** identifies general mitigation measures that should be applied to every project relevant to the draft GWS, for each of the SEA Topics, focusing on those areas that would reduce negative impacts or enhance positive impacts. Managing risks effectively will require a proactive, systems-based approach that allows for ongoing review, adaptation, and collaboration across regulatory, financial, and community stakeholders.

In terms of network interventions, it is recognised that green infrastructure alone is often insufficient to fully mitigate all catchment risks - particularly those related to sewer flooding, pollution events, or regulatory compliance under the UWWTD and rUWWTD. However, nature-based solutions offer significant co-benefits, and will be implemented wherever feasible.

Table 11-1: General Mitigation Measures for SEA Topics and their SEOs

SEA Topic	Recommended Action for Mitigation / Further study
General	<ul style="list-style-type: none"> • More detailed baseline collection and project studies will be required to confirm the significance of environmental effects and ensure appropriate mitigation is included as part of the scheme designs. • Conduct early-stage route and site selection exercises and early-stage environmental constraint mapping • Specific project-level environmental assessments will be identified, and may include: <ul style="list-style-type: none"> ○ Environmental Impact Assessment (EIA) / EIA Screening ○ Appropriate Assessment (AA) / AA Screening ○ Water Framework Directive Assessment ○ Preliminary Ecological Appraisal • Assessments for individual solutions emerging from the GWS should consider: <ul style="list-style-type: none"> ○ Cumulative effects of other proposed solutions in the GWS ○ In-combination effects of other Uisce Éireann operations and developments in the area ○ In-combination effects with other projects and developments (resulting from relevant plans, including local authority development plans and subsequent planning applications) ○ Careful consideration must be given to sensitive receptors, such as designated sites, protected species and habitats, and waterbodies

SEA Topic	Recommended Action for Mitigation / Further study
	<ul style="list-style-type: none"> • Ongoing engagement with regulators, local authorities, partner organisations, and other stakeholders will help deliver shared benefits and avoid adverse impacts. • SEA and NIS mitigation measures should be incorporated into early studies and design of project-level schemes to ensure recommendations are carried forward. • Ensure procedures to identify biodiversity and environmental enhancement opportunities in future scheme design and development, which are part of UÉ’s Invest to Outcome (I2O) process, are implemented. • Environmental mitigation requirements must be considered throughout costing and scheme development. • A Construction Environmental Management Plan (CEMP) must be implemented if a project poses potential risk to the environment or local community
<p>Water Environment (W1)</p>	<ul style="list-style-type: none"> • Outfall location must offer long-term compliance. • Monitor regulatory developments closely throughout design and development and maintain ongoing engagement with the EPA and other competent authorities. • Ensure that the GWS is updated in line with River Basin Management Plan cycles and requirements. • Implement strategic Blue-Green Corridors where suitable • Implement the requirements of Directive 2024/3019 - the recast Urban Wastewater Treatment Directive (rUWWTD), including: <ul style="list-style-type: none"> ○ Integrated Urban Wastewater Management Plans will be required for all agglomerations of 100,000 PE and above. For agglomerations between 10,000 PE and 100,000 PE, Integrated Urban Wastewater Plans are to be put in place where stormwater overflows or urban runoff pose a risk to the environment or public health. ○ Measures are to be put in place to limit the pollution from stormwater overflows to no more than 2% of the annual collected urban wastewater load calculated in dry weather flow conditions. • Maintain regular engagement throughout the implementation of the GWS with stakeholders such as the NPWS, IFI, and the EPA in relation to the water environment

SEA Topic	Recommended Action for Mitigation / Further study
	<ul style="list-style-type: none"> • Surface water should be separated from combined or foul sewer systems to reduce the risk of overloading wastewater networks during storm events. Disconnecting surface runoff at source will help alleviate pressure on existing infrastructure, lowering the likelihood of flooding and untreated discharges. This should be supported by the integration of Sustainable Drainage Systems (SuDS), such as permeable paving, green roofs, swales, and detention basins. These measures will slow, store, and treat runoff close to where it falls, enhancing network resilience and promoting a more sustainable, long-term approach to stormwater management. • Collaborate with stakeholders to address catchment-wise issues • Comprehensive and site-specific flood risk assessments using climate models must be undertaken. • Implement measures to minimise flood risk and prevent contamination of the water environment during construction. • Elevate critical assets above projected flood levels and ensure design of infrastructure is flood resilient.
Population, Economy, Tourism and Recreation, and Human Health (P1)	<ul style="list-style-type: none"> • Investigate wellbeing measures for staff and public, including: <ul style="list-style-type: none"> ○ Odour and Noise Control using odour containment systems (e.g., covered tanks, sealed channels), air treatment units such as biofilters or activated carbon scrubbers, and sound attenuation measures including acoustic enclosures, silencers, and strategic site layout. ○ Public Engagement and Education to raise public awareness about wastewater management, pollution prevention, and the environmental value of sustainable water infrastructure. ○ Occupational Health and Safety, which is paramount in Uisce Éireann. Ensuring a safe working environment for all staff is one of UÉ's five core values and is fundamental to everything the organisation does. This commitment is embedded through initiatives such as Work Safe, Home Safe, which reflects the belief that everyone has the right to come to work and return home safely each day. ○ Implement traffic management measures during proposed UÉ construction works to reduce the impacts of traffic congestion on communities and public right of ways. This is implemented by UÉ for all infrastructure projects with the potential to impact on traffic congestion.

SEA Topic	Recommended Action for Mitigation / Further study
	<ul style="list-style-type: none"> ○ Occupational health and safety will be prioritised through training, monitoring, and strong safety protocols.
Climate Change (C1)	<ul style="list-style-type: none"> • Adhere to UÉ's Sustainability Framework, which aligns with national and EU climate and sustainability objectives • Integrate biodiversity and climate change monitoring into programme and infrastructure management to guide adaptive decision-making. • Implement sustainability solutions and measures in line with Uisce Éireann sustainability objectives. • Use of Renewable Energy during both construction and operation e.g. solar panels. • Efficient use of energy e.g. capture thermal energy from wastewater (10–15°C) via heat exchangers/pumps for heating or electricity generation. • Expand use of anaerobic digestion and combined heat and power to convert biogas into electricity and heat. Further expansion should be explored in line with the recast UWWTD. • Nature based solutions will support more natural hydrological cycles. • Development of climate change adaptation plans. • Use of carbon neutral design and construction. • Utilise Gravity-fed systems. • Use high-efficiency equipment (e.g., VSD pumps). • Account for the latest understanding of climate change impacts on protected areas and WFD objectives in the design. • Use ongoing climate change studies to inform future study area scoping and to guide the solutions prioritised for investment. • Renewable energy, where possible, should be used to support the decarbonisation of construction phases e.g., temporary site compounds can be powered by solar or hybrid generators, reducing reliance on diesel, and lowering emissions. • Where possible, locally sourced materials should be prioritised to reduce emissions from transportation. • Apply whole-life carbon assessments and digital design tools (e.g., BIM). • Implement measures to minimise flood risk and prevent contamination of the water environment during construction. • Elevate critical assets above projected flood levels and ensure design of infrastructure is flood resilient.

SEA Topic	Recommended Action for Mitigation / Further study
Biodiversity (B1)	<ul style="list-style-type: none"> • Implement UÉ's Biodiversity Action Plan across the GWS study area. Include biodiversity enhancement measures to improve ecological connectivity and to ensure that Biodiversity Net Gain is achieved by UÉ. Apply the following hierarchical approach: <ul style="list-style-type: none"> ○ Blue-green Infrastructure and Nature Based Solutions ○ Avoid Impacts in the first instance ○ Reduce Impacts where possible ○ Mitigate for where impacts occur <p>Incorporating blue-green infrastructure nature-based solutions will help manage stormwater more effectively and will enhance biodiversity, improve water quality, and provide recreational and aesthetic benefits to local communities.</p> <ul style="list-style-type: none"> • Conduct ecological surveys as part of the site and route selection process, which will inform design and site/route selection. • Maintain regular engagement throughout the implementation of the GWS with stakeholders such as the NPWS, IFI, the EPA and An Taisce in relation to biodiversity. • Employ Ecological Clerks of Works to monitor and supervise construction in environmentally sensitive areas. • Implement strategic Blue-Green Corridors where suitable. • Implement constructed wetlands and green infrastructure in UÉ sites where suitable. • Avoid contributing to the spread of invasive alien species (IAS) during construction or operational activities. • Use of nature-based solutions and holistic catchment management approaches. • If IAS are identified within the vicinity of any construction areas, ensure invasive species management plans are in place and adhered to. • Careful siting, planning, and construction will be required to minimise adverse impacts to biodiversity. • Final outfall should be aligned in a way that avoids sensitive habitats. Aquatic ecological surveys at early stages of the GWS will be key to confirming the optimal outfall route. • Explore opportunities to slow the movement and drainage of water, supporting natural hydrogeological processes. • Include native planting and ecological corridor creation in design.

SEA Topic	Recommended Action for Mitigation / Further study
Material Assets (M1)	<ul style="list-style-type: none"> • Implement sustainable design measures and construction practices to reduce resource use and waste. • Adopt flexible, modular infrastructure designs that can be scaled over time. • Adopt circular economic principles, such as: <ul style="list-style-type: none"> ○ The conversion of treated sludge into biosolids ○ Improve sludge treatment (e.g., drying, dewatering) to reduce disposal costs/emissions • Apply the carbon hierarchy to decision-making: Use less → Use efficiently → Use at low cost → Use renewables. Consider: <ul style="list-style-type: none"> ○ High-efficiency equipment (e.g., VSD pumps) ○ Real-time monitoring and automation ○ Gravity-fed systems ○ Passive building designs • Optimise the wastewater network and manage demand to improve system efficiency and capacity. • Recycle treated effluent for use as wash water for WwTP site e.g. for cleaning screens, grit, traps, storm tanks etc. • Reuse biosolids and recover phosphorus for fertiliser. • Using treated effluent for industrial cooling processes will reduce the demand for freshwater resources. • Elevate critical assets above projected flood levels and upgrade and future-proof wastewater treatment facilities to handle climate impacts and population growth. This will help to ensure reliable service and regulatory compliance. • Ensuring that essential systems remain operational during flood events is vital for maintaining service continuity, preventing environmental harm, and protecting public health. • Materials with low embodied carbon, such as recycled aggregates, sustainably resourced timber, low-carbon concrete alternative (e.g., geopolymers or GGBS-blended cement), and products certified to environmental standards should be used where possible. • Ensure that sludge application aligns with the National Biosolids Strategy and existing legislation, so that wastewater nutrients are a resource for safe and sustainable soil fertility enhancement.

SEA Topic	Recommended Action for Mitigation / Further study
	<ul style="list-style-type: none"> Material reusability and recyclability should be considered in design specifications to support circular economy outcomes.
Landscape, Townscape and Seascape (L1)	<ul style="list-style-type: none"> Conduct Landscape and Visual Impact assessments as part of project and design scoping, where relevant. Use trees, hedgerows, and other planting, to minimise visual disturbance and reduce the impact of above-ground permanent infrastructure. Restore land to its original condition or improve its environmental value to achieve a biodiversity net gain after construction.
Cultural Heritage – Archaeological and Architectural (H1)	<ul style="list-style-type: none"> Identify and avoid impacts on areas of archaeological importance and cultural heritage sites. Implement UÉ code of practice and guidance documents to ensure the protection of cultural heritage, archaeology and architecture. UÉ is currently finalising a code of practice and guidance documents to ensure the protection of cultural heritage sites during all infrastructure projects, which has been agreed and signed off by the National Monuments Service. Maintain regular engagement throughout the implementation of the GWS with stakeholders such as An Taisce, the National Monuments Service, OPW, and the Heritage Council in relation to archaeological and architectural cultural heritage.
Geology and Soils (G1)	<ul style="list-style-type: none"> Infrastructure design should avoid historic and authorised landfill sites. Refer to Geological Survey Ireland (GSI) soil maps. Engage with stakeholders such as Teagasc, GSI, and the EPA in relation to the protection of soil. Site Investigation works should be undertaken to inform appropriate construction locations. Infrastructure such as WwTPs / pumping stations shall be prioritized for placement on brownfield rather than greenfield sites, where relevant. Implement best practice construction techniques when working within proximity to historic or authorised landfill sites to prevent potential disturbance of contaminants. Implement pollution prevention and control measures to reduce the likelihood of contamination of the soil and wider terrestrial environment during construction.

SEA Topic	Recommended Action for Mitigation / Further study
	<ul style="list-style-type: none"> • Opportunities to use soil management plans to apply hierarchy to avoid loss and promote reuse and maintain soil health. • Landspreading of treated wastewater sludge will provide nutrient return to soils, improved soil fertility and structure.
Air Quality (A1)	<ul style="list-style-type: none"> • Implement an odour control plan and explore the use of odour containment systems (e.g., covered tanks, sealed channels), air treatment units such as biofilters or activated carbon scrubbers). • During construction, follow standard best practice measures to ensure that the impact of air quality on construction will be minor/negligible. • Utilise technologies that produce less odour.
Noise and Vibration	<ul style="list-style-type: none"> • Where sensitive receptors may be affected by noise, mitigation will be put in place.

As the GWS progresses into more site-specific and project level design, further measures will be required to prevent, reduce, and mitigate adverse effects and maximise the beneficial effects of the strategy. A number of these measures are set out in

Table 11-2.

Table 11-2: Design measures to prevent, reduce, and mitigate effects during GWS implementation

New Network Asset	Measures to prevent, reduce, and mitigate
Sewer Capacity and Underground Storage Upgrades	<ul style="list-style-type: none"> • Minimise resource use during construction and operation by optimising design, including materials and equipment selection. • Carry out assessments to determine the most suitable siting, design, and construction methods for below-ground storage and sewers, with costs and scheduling accounted for accordingly. • Given storage will typically be an end-of-pipe solution, the new infrastructure will typically be sited near watercourses. • Strict pollution control measures will be required during construction, especially end-of-pipe solutions sited near watercourses. • Relevant consenting requirements should be reviewed, including Section 50 Consent under the Arterial Drainage Act 1945 (No. 3 of 1945) for the construction or alteration of watercourse infrastructure. • When siting underground storage, prioritise efficient land use, such as reusing previously developed sites. Consider that such storage may limit future development and ensure alignment with local development policies and plans. • Implement UÉ's Biodiversity Action Plan and the requirement for Biodiversity Net Gain on all UÉ infrastructure projects. • Comply with UÉ Technical Design Standard for networks and storage e.g. IW-TEC-800-04.
Green or SuDS Storage	<ul style="list-style-type: none"> • SuDS should be designed for water management and to provide additional multi-functional benefits, including biodiversity, landscape enhancement, and urban heat reduction. To achieve this, design will need to consider local factors, such as biodiversity value, local connectivity, and locally prepared Landscape Character Assessments. • SuDS should be designed and implemented according to guidance, with particular attention to controlling pollution and managing discharges to watercourses and groundwater.

New Network Asset	Measures to prevent, reduce, and mitigate
Surface water separation and removal	<ul style="list-style-type: none"> • Reduce the amount of new surface water sewers as part of a hybrid solution (such as SuDS features, rain gardens etc). • Design new surface water sewers in a manner which slows the flow of water to the receiving environment.
SWO Rationalisation	<ul style="list-style-type: none"> • Review, upgrade, and consolidate existing stormwater overflows to reduce the number of discharge points while maintaining effective flow management. Rationalisation may include decommissioning or combining multiple SWOs into a single, better-managed outlet with improved treatment, attenuation capacity, and storage.
SWO Effluent Treatment	<ul style="list-style-type: none"> • Use nature-based solutions in combination with screening and traditional infrastructure to contain SWOs before discharging into receiving water bodies. Nature-based solutions, such as constructed wetlands, reed beds, and biofiltration systems, which naturally improve water quality by removing contaminants, are a preferred option.
New WwTP	<ul style="list-style-type: none"> • When selecting the precise location of the new WwTP, consideration should be given to: <ul style="list-style-type: none"> ○ The nature of the site and any sensitive receptors (e.g., terrestrial and aquatic biodiversity, heritage, archaeology, landscape, local land uses sensitive to odour and noise) and the local published information for these topics (e.g., Landscape Character Assessments, Biodiversity Action Plans, Local Development Plans) ○ Seeking opportunities to reduce resource use during construction, increase efficiency in operation, increase effectiveness of treatment ○ WwTP shall be designed to ensure no deterioration in waterbody status and contributes towards achieving 'Good' waterbody status ○ WwTP option can be modular in design, allowing for phased expansion and flexibility to adapt to future requirements. ○ Design WwTP so that it can withstand and recover from the impacts of a changing climate ○ Placement of WwTP on brownfield site is preferable

11.2 Monitoring Plan

A monitoring plan is a requirement under the SEA Directive to provide a basis for identifying significant environmental effects during the implementation of the plan. The monitoring plan will review the predicted impacts of the GWS, and the adequacy of the mitigation measures recommended so that additional mitigation can be applied if required. Performance against the monitoring plan targets will also inform the next cycle of the GWS and its SEA process.

The draft GWS will be monitored through a robust framework of Key Performance Indicators (KPIs), data collection, and reporting mechanisms to ensure the effectiveness of wastewater management. The KPIs will focus on:

- **Regulatory Compliance:** Measuring adherence to the revised Urban Wastewater Treatment Directive (rUWWTD) and Water Framework Directive (WFD) standards.
- **Ambient Water Quality Monitoring:** Ensuring that no deterioration of water quality occurs as part of RBMP monitoring.
- **Network Performance:** Monitoring stormwater overflow (SWO) event frequency and sewer network capacity to prevent flooding risks.
- **Treatment Efficiency:** Evaluating WwTP removal efficiency in line with UWWTD requirements and licencing provision.
- **Annual Environmental Reports:** Monitoring WwTP performance annually against environmental licence conditions to track any deterioration in performance.

As the draft GWS does not involve the recommendation of specific investment options, this monitoring plan is intended to track the progress of implementing the SEA recommendations during the local strategy implementation.

The monitoring plan covers the integration of environmental and sustainability considerations throughout implementation of the draft GWS and the options development methodology. It also provides a framework for future long-term monitoring. In most cases, more detailed baseline collection and project studies will be required to confirm the significance of environmental effects and ensure appropriate mitigation is included as part of the scheme designs.

In certain circumstances, monitoring and feedback will identify the need for a variation of the draft GWS. Where a variation is required, Uisce Éireann will screen the change against SEA and AA requirements in accordance with its legal obligations. As part of the screening, Uisce Éireann will consult with the EPA and relevant Government Departments as required by Article 9(5) of the European Communities (Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435/2004).

If, following screening, Uisce Éireann determines that the change is likely to have significant effects on the environment, it will carry out an SEA before adopting the change. Uisce Éireann will also carry out an AA if it determines, following screening, that the change is not directly connected with or necessary to the management of any European site and Uisce Éireann cannot, on the basis of objective scientific information, exclude that the change, individually or in combination with other

plans and projects, will have a significant effect on European sites, as required by Article 42(6) of the EC (Birds and Natural Habitats Regulations) 2011 (S.I. 477/2011).

The draft Monitoring Plan is provided in **Table 11-3** and will be updated following consultation on this draft SEA Environmental Report. It will form part of the SEA statement to be published with the final GWS.

Table 11-3: Monitoring plan with indicators and targets for Strategic Environmental Objectives (SEOs)

SEA Topic	Strategic Environmental Objective (SEO)	Indicators	Target	Source Data
All topics	All SEOs.	Monitoring plan data collection implemented (see below for each topic) set up to provide baseline information for the next GWS and the basis for monitoring future GWS implementation.	Monitoring plan data compiled for feeding into future GWS.	Uisce Éireann
		Transparent documentation of the appraisal and selection process.		
		Population projections must be regularly reviewed and updated alongside Strategy revisions, ensuring alignment with emerging data and enabling the timely incorporation of adaptive pathways as necessary.	Accurate population data.	Central Statistics Office
Water Environment (W1)	<p><u>Water quality:</u> Contribute towards the ‘no deterioration’ in WFD (2000/60/EC) Status requirement and restore and improve waterbody status within the GWS Study Area to meet WFD and RBMP objectives related to the provision of wastewater services</p> <p>Minimise flood risk by separating foul and surface water flows and</p>	<p>Effluent monitoring data.</p> <p>WwTP pollutant removal efficiency.</p> <p>Surface Water, Marine Water and Groundwater quality monitoring data.</p> <p>A new modelling project and asset performance assessment is recommended at Moycullen WwTP (Ballycurke_010).</p> <p>Process optimisation may be needed prior to 2055 to achieve the desired ELV limit,</p>	<p>Ensure the WwTPs are achieving their wastewater discharge ELV’s and are in compliance with their WWDL limits.</p> <p>Reduced pollution inputs to surface water, marine water, and groundwaters and prevent deterioration (WFD objective).</p> <p>Monitor SWOs.</p>	Uisce Éireann and EPA

SEA Topic	Strategic Environmental Objective (SEO)	Indicators	Target	Source Data
	incorporating nature-based solutions such as sustainable drainage systems and wetlands.	subject to a more comprehensive modelling assessment. This does not affect strategy outcomes to retain treatment at this plant.		
		Load discharged from stormwater overflows (SWO) relative to the agglomeration overall performance.	Annex V non-binding objective of the rUWWTD.	OPW / Uisce Éireann
Population, Economy, Tourism and Recreation, and Human Health (P1)	Protect and contribute to enhancement of human health and wellbeing and support sustainable economic and population growth.	Number of complaints received relating to construction works.	Minimise extent and period of disruption to traffic related to construction.	Uisce Éireann / Local Authorities
	Prevent restrictions to recreation and amenity facilities, and improve the facilities, where possible.	Number of programmes and projects improving WwTP discharge and storm overflows. Effluent monitoring data.	Minimise access restrictions and noise disturbance to people from construction and operation of schemes. The WwTPs are operating in accordance with their wastewater discharge authorisation. Adherence with recreational bathing waters standards as per the Bathing Waters Directive (2006/7/EC).	
	Protect and enhance freshwater and marine fisheries and designated shellfish areas.	WFD water quality and water quality at shellfish protected areas.	Achieve required water quality for shellfish areas as per S.I. No. 268 of 2006 (as amended).	Sea-fisheries Protection Authority / EPA

SEA Topic	Strategic Environmental Objective (SEO)	Indicators	Target	Source Data
				/ Local Authorities
Climate Change (C1)	<p><u>Climate Change Mitigation</u> Reduce greenhouse gas and other air emissions from wastewater services by improving energy efficiency, promoting water conservation and reuse, and incorporating ecosystem services such as carbon sequestration into planning and operations.</p> <p><u>Climate Change Adaptation</u> Strengthen the resilience of wastewater services and infrastructure to climate change by anticipating environmental and operational pressures and implementing adaptive measures. Consider extreme weather events throughout project lifecycle.</p>	<p>Carbon Footprint during construction.</p> <p>Carbon footprint for the operation of the GWS.</p> <p>Percentage of energy supply from renewable sources.</p> <p>Percentage improvement in energy efficiency due to the installation of energy-efficient equipment, prioritisation of gravity-fed pipelines, etc.</p>	<p>Benchmarked reduced carbon emissions from construction.</p> <p>Increased contribution of renewable/low carbon energy sources for existing and new schemes.</p> <p>Minimise the annual carbon emissions from operation.</p> <p>Improve energy efficiency of wastewater services.</p> <p>EU GHG emission targets.</p> <p>Improved resilience of environment to climate change.</p>	<p>Uisce Éireann / Galway City Council / Galway County Council / OPW / EPA / National Roads Authority / Department of Climate, Energy and the Environment</p>
Biodiversity (B1)	<p>Protect and enhance terrestrial and aquatic biodiversity, and habitat connectivity, with regard for designated European sites and</p>	<p>Ensure Appropriate Assessment is undertaken on all projects and activities.</p> <p>No adverse effects on integrity of European or national level designations.</p>	<p>Maintain integrity of habitats and conservation status of species within, and with a source-pathway-receptor connection to the GWS Study Area, as per the requirements</p>	<p>Uisce Éireann</p>

SEA Topic	Strategic Environmental Objective (SEO)	Indicators	Target	Source Data
	nationally protected habitats and species.	None of the projects or activities impact on the achievement of the favourable conservation status of Qualifying Interests or Special Conservation Interests	of the EU Habitats Directive and Birds Directives. Maintain integrity of NHAs and other nationally protected sites as per S.I. No. 38 of 2000. Ensure protection of flora and fauna as per S.I. No. 39 of 1976 (as amended).	NPWS (Article 17 reporting every 6 years)
	Achieve Uisce Éireann’s Biodiversity Action Plan commitments, with particular emphasis on construction and wastewater services	Ensure the implementation of the UÉ Biodiversity Action Plan. Ensure the completion of the Uisce Éireann Biodiversity Register for all infrastructure projects within the GWS study area. Effluent monitoring data. Environmental Management Plan.	Biodiversity Net Gain for all infrastructure projects. Improved connectivity amongst habitats.	Uisce Éireann
		Invasive Species Management Plans and Invasive Alien Species (IAS) monitoring.	Management, and where possible, eradication of IAS in locations with GWS infrastructure. No spread of IAS during construction of proposed infrastructure or operation of new networks, outfall and treatment plant.	Uisce Éireann

SEA Topic	Strategic Environmental Objective (SEO)	Indicators	Target	Source Data
Material Assets (M1)	<p><u>Resource use and waste management</u></p> <p>Minimise resource use and waste generation from wastewater infrastructure, including sludge and treatment residuals.</p> <p>Apply circular economy principles across lifecycle decision making.</p>	<p>Volume of recycled / reused materials used.</p> <p>Proportion of waste sent to landfill.</p>	<p>Minimise material consumption and waste during construction and operation of schemes.</p> <p>Increase investment in existing and new wastewater management.</p>	Uisce Éireann
	<p><u>Asset use</u></p> <p>Minimise impacts on surrounding material assets and infrastructure.</p> <p>Optimise the use of existing wastewater assets through effective capacity management and targeted upgrades to existing treatment facilities.</p>	<p>Ensure the completion of the Biodiversity Register for all infrastructure projects within the GWS study area.</p>	<p>Minimise permanent loss of greenfield land, including agricultural, forestry or other land uses.</p>	Uisce Éireann
Landscape, Townscape and Seascape (L1)	<p>Protect and enhance designated and valued landscapes, townscapes, seascapes, and visual amenity in the planning and delivery of wastewater services.</p>	<p>Ensure completion of Landscape and Visual Impact Assessment (LVIA) for all infrastructure projects requiring planning and consent, where relevant.</p>	<p>Improvement or no net change in landscape quality through landscape design and mitigation and enhancement.</p>	Uisce Éireann / Galway County Council / Galway City Council
Cultural Heritage - Archaeological and	<p>Protect designated cultural heritage assets, architectural sites, and archaeological sites.</p>	<p>Ensure the implementation of UÉ cultural heritage code of practice and guidance documents for all infrastructure projects.</p>	<p>No unauthorised physical damage or alteration of the context of cultural heritage features due to UÉ activities.</p>	Uisce Éireann / Department of Housing Local Government

SEA Topic	Strategic Environmental Objective (SEO)	Indicators	Target	Source Data
Architectural (H1)	Record, add to, and improve knowledge, documentation, and public access to cultural, architectural, and archaeological heritage.		All UÉ infrastructure projects avoid impacts on cultural heritage sites.	and Heritage (to monitor the condition of all statutorily protected heritage sites)
Geology and Soils (G1)	Protect geology and soils in the GWS Study Area. Contribute towards the appropriate management of soil quality and quantity related to wastewater services.	Geological sites encroached with GWS options.	No loss of statutory and non-statutory geological sites of interest.	Uisce Éireann
Air Quality (A1)	Identify and seek to apply wastewater treatment improvements, higher design standards and operation practices to minimise odour from wastewater plants. Apply best practice construction methodology to ensure there is no impact to air quality during construction.	Air quality monitoring at EPA Air quality monitoring stations in Galway (Rahoon Road, Eyre Square, Briarhill). Number of complaints received relating to odour due to the operation of the GWS. Number of complaints received relating to dust emissions during construction works.	Minimise air quality / odour impact. Air quality in GWS Study Area in line with defined hourly/daily/monthly and annual thresholds, as set in the various EU air quality directives (e.g., CAFE Directive 2008/50/EC).	Uisce Éireann / EPA

11.3 Adaptive Planning

Given the dynamic and evolving nature of climate change, environmental legislation, and technological innovation, the Galway Wastewater Strategy must be able to adapt to changes²¹⁶. Adaptive pathways have been identified as part of the Strategy's framework and align with objectives of the Water Services Strategic Plan. Adaptive pathways will identify decision points and sequence interventions to accommodate changes in knowledge, regulation, or societal needs, while maintaining strategic coherence.

The GWS outlines phased actions through to 2080, integrating short-, medium-, and long-term projects. Early implementation phases will involve critical appraisals, particularly around the future role of the Mutton Island WwTP and site selection for the new WwTP. The site selection process must determine the most suitable and sustainable locations for the new WwTP, which will involve technical, environmental, and economic appraisals.

Performance and growth monitoring will enable verification that the options identified remain viable, or that there may be a need to reevaluate proposed solutions. To deliver long-term environmental, social, and economic benefits, the GWS must be both flexible and robust, and the GWS must continuously evolve with changing conditions. This and future iterations of this document should be considered in the continual evolution of the Strategy.

Key decision points will serve as economic and strategic checkpoints to reassess the cost-effectiveness and relevance of the selected solutions. Six-yearly reviews will enable regular updates, ensuring the GWS remains aligned with evolving policy, environmental targets, and investment priorities.

²¹⁶ British Standards Institution, 2021. Adaptation to climate change. Using adaptation pathways for decision making BS 8631:2021. Available at: [Adaptation to climate change. Using adaptation pathways for decision making](#). Accessed: March 2026.

12. Conclusion and Next Steps

All Options (aside from Option 3) demonstrate a comparable level of performance and deliver significant improvements to the SEA Topics and their SEOs compared to the 'Do-Nothing' scenario.

The nine options were assessed through a robust Multi-Criteria Decision Analysis (MCDA) exercise as part of the optioneering process for the draft GWS. The MCDA had slightly different results to the SEA Environmental Report, which reflects differences in assessment criteria. While some MCDA criteria were broadly comparable with the SEOs, others focused on engineering and delivery considerations—such as delivering outcomes and long-term resilience, flexibility, planning, and regulatory risks—which are not directly comparable with the SEOs. The MCDA's preferred options (Option 9 (east WwTP, east outfall) and Option 7 (east WwTP, west outfall)) are considered suitable when assessed against the SEA Topics and their SEOs in the SEA.

The NIS for Option 9 (east WwTP, east outfall) and Option 7 (east WwTP, west outfall) concluded that through incorporating the avoidance and mitigation measures detailed in the NIS, adverse effects on the integrity of European Sites are not anticipated at plan-level, alone or in-combination with other Plans or Projects. The SEA cumulative effects assessment determined that with mitigation and monitoring measures outlined in Section 11 of the SEA Environmental Report, adverse combined effects during construction of the GWS are unlikely. It also found that many combined effects involving the operational phase of the GWS are expected to result in positive environmental outcomes.

As per SEA requirements, the Option taken forward must have a specific monitoring plan and mitigation in place. It is recommended that the GWS is implemented in a phased manner, and with regulatory oversight from the Commission for Regulation of Utilities and the EPA.

There is still important work to complete before the draft GWS can be adopted. The draft GWS, SEA Environmental Report, and NIS are available to view on the Uisce Éireann website at: [Draft Galway Wastewater Strategy | Uisce Éireann](#).

The second public consultation phase will take place between May and July 2026, and last for eight weeks. Written submissions or observations can be sent to Uisce Éireann during this period.

Email: gws@water.ie

Post: Uisce Éireann, Galway Wastewater Strategy, 1 Galway Business Park, Upper Newcastle Road, Dangan, Galway, H91 A3EF

Submissions will be reviewed and relevant feedback incorporated into the final GWS.

Following public consultation, the strategy to be implemented will be confirmed and work related to site selection, environmental assessment, and planning processes will commence.

Appendix A Relevant Legislation, Plans and Programmes

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
International											
Environmental Liability Directive (2004/35/EC)	✓	✓	✓	✓				✓	✓		H
Water Framework Directive (2000/60/EC)	✓	✓	✓	✓	✓	✓		✓			H
Bathing Water Directive (2006/7/EC)	✓	✓									H
Floods Directive (2007/60/EC)	✓	✓	✓		✓	✓	✓	✓			H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Nitrates Directive (91/676/EEC) and current derogations	✓	✓		✓				✓				H
Urban Waste Water Directive (91/271/EEC) and recast Urban Wastewater Treatment Directive (EU Directive 2024/3019)	✓	✓		✓	✓	✓						H
Marine Strategy Framework Directive (2008/56/EC)	✓		✓	✓		✓						H
Groundwater Directive (2006/118/EC)	✓	✓		✓				✓				H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Maritime Spatial Planning Directive (2014/89/EU)	✓	✓				✓	✓					H
Common Fisheries Policy (CFP) (Regulation EU No 1380/2013)	✓	✓		✓		✓	✓					H
Access to Environmental Information Directive (2003/4/EC)	✓	✓	✓	✓				✓	✓			H
recast Ambient Air Quality and Cleaner Air for Europe Directive (2024/2881)		✓							✓			L
Recast Drinking Water Directive (EU 2020/2184)	✓	✓	✓		✓			✓				H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Strategic Environmental Assessment Directive (2001/42/EC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H
Habitats Directive (92/43/EEC)	✓	✓	✓	✓		✓	✓	✓				H
Birds Directive (2009/147/EC)				✓								L
Waste Framework Directive (2008/98/EC)	✓	✓		✓	✓		✓					H
Industrial Emissions Directive (2010/75/EU) and its updated Directive (EU) (2024/1785)	✓	✓		✓				✓	✓	✓		L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Environmental Noise Directive (2002/49/EC)		✓									✓	L
EU Nature Restoration Regulation (2024/1991)	✓	✓	✓	✓				✓	✓			H
Soil monitoring law (Directive (EU) 2025/2360)	✓		✓	✓	✓			✓			✓	H
European Climate Law (2021/1119)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H
EU Soil Strategy for 2030	✓		✓	✓	✓			✓			✓	H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
EU Biodiversity Strategy for 2030	✓	✓	✓	✓				✓	✓		H
The European Green Deal	✓	✓	✓	✓		✓		✓	✓		H
UN Sustainable Development Goals	✓	✓	✓	✓	✓	✓	✓	✓	✓		H
The Paris Agreement 2015	✓	✓	✓	✓				✓	✓		H
European Landscape Convention	✓	✓				✓	✓	✓			L
EU Tourism Policy		✓	✓								L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
National											
European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 S.I. No. 435/2004 (as amended by 2011 S.I. No. 200/2011)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H
European Union (Land Use Planning – Strategic Environmental Assessment) Regulations 2025 (Sl. 456/2025)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H
Wastewater Discharge (Authorisation) Regulations 2007 (S.I. No. 684/2007) (as amended)	✓	✓									H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
Wildlife Act 1976 (as amended, including 2010)	✓		✓	✓				✓			L
Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021))	✓	✓	✓	✓	✓			✓			H
Environmental Liability Regulations 2008 S.I. No. 547/2008 (as amended)	✓	✓	✓	✓				✓	✓		H
European Communities (Environmental Impact Assessment)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
(Amendment) Regulations 2018 (S.I. No. 296/2018)												
Environmental Protection Agency Act 1992–2007, S.I. No. 7/1992 (as amended)	✓	✓	✓	✓				✓	✓			H
European Communities (Industrial Emissions) Regulations 2013, S.I. No. 138/2013.	✓	✓						✓	✓			L
European Communities (Water Policy) Regulations 2003 S.I. No. 722/2003 (as amended)	✓	✓	✓	✓		✓		✓				H
Bathing Water Quality Regulations 2008 S.I. No.	✓	✓										H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
79/2008 (as amended)												
Water Environment (Abstractions and Associated Impoundments) Act 2022 (No. 48 of 2022)	✓							✓				H
European Communities (Assessment and Management of Flood Risks) Regulations 2010 S.I. No. 122/2010 (as amended)	✓	✓	✓			✓	✓	✓				H
European Communities (Marine Strategy Framework) Regulations 2011 (as amended)	✓		✓	✓		✓						H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
European Communities Environmental Objectives (Groundwater) Regulations 2010 S.I. No. 9/2010 (as amended)	✓	✓		✓	✓			✓				H
European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018) (as amended)	✓	✓	✓	✓		✓	✓	✓	✓			H
Water Services Act 2013, No. 30 of 2013 (as amended)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	H
European Union (Renewable Energy) Regulations 2020 S.I. No. 365/2020 (as amended)	✓		✓		✓	✓						L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
Planning and Development Act 2000 (No. 30 of 2000) (as amended)	✓	✓		✓		✓	✓	✓	✓	✓	H
Planning and Development Regulations 2001 (S.I. No. 600/2001) (as amended)	✓	✓		✓		✓	✓	✓	✓	✓	H
Planning and Development Act 2024 (No. 34 of 2024) (as amended)	✓	✓		✓		✓	✓	✓	✓	✓	H
European Union (Good Agricultural Practice for Protection of Waters) Regulations 2014 S.I. No. 31/2014 (as amended)	✓	✓						✓			H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Urban Waste Water Treatment Regulations 2001 (S.I. No. 254/2001 (as amended))	✓	✓		✓							✓	H
European Union (Drinking Water) Regulations 2014 S.I. No. 122/2014 (as amended)	✓	✓									✓	H
European Communities (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/201 (as amended)	✓			✓								H
Waste Management Act 1996 (No. 10 of 1996) (as amended)	✓	✓		✓	✓				✓	✓		H
Maritime Area Planning Act 2021, No. 3 of 2021	✓	✓			✓	✓						H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
European Communities (Air Quality Standards) Regulations 2011 S.I. No. 180/2011		✓	✓		✓				✓		L
European Communities (Environmental Noise) Regulations 2018, S.I. No. 549/2018 (as amended) and European Communities (Environmental Noise) Regulations 2006 SI. No. 140/2006 (as amended)		✓			✓					✓	L
Heritage Act 2018, No. 24 of 2018	✓			✓	✓		✓				L
National Monuments Acts 1930–2014 and		✓		✓	✓	✓	✓				L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 (No. 26 of 2023)												
Architectural Heritage and Historic Monuments Act 1999 (No. 19 of 1999)		✓					✓					L
Maritime Area Planning Act 2021 (No. 50 of 2021)	✓	✓	✓	✓		✓	✓		✓	✓		H
Circular Economy and Miscellaneous Provisions Act 2022 (No. 26 of 2022) (as amended)	✓		✓	✓				✓				H
Heritage Ireland 2030	✓	✓	✓	✓		✓	✓	✓				L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Uisce Éireann Interim Pesticide Strategy: A collaborative approach with catchment stakeholders	✓	✓						✓				H
National Energy and Climate Plan 2021-2030		✓										L
National Mitigation Plan	✓	✓	✓	✓				✓	✓			H
Offshore Renewable Energy Development Plan (2014) and Interim Review (2018)		✓	✓	✓		✓						L
National Energy Efficiency Action Plan for Ireland No. 4 2017 - 2020		✓										L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
National Policy Position on Climate Action and Low Carbon Development	✓	✓	✓	✓				✓			H
National Adaptation Framework 2024	✓	✓	✓	✓		✓	✓	✓	✓		H
Whole of Government Circular Economy Strategy 2026-2028: Accelerating Action	✓		✓	✓				✓			H
National Landscape Strategy	✓	✓	✓	✓		✓	✓	✓			L
National Hazardous Waste Management Plan 2021 – 2027 (EPA)	✓	✓	✓	✓				✓	✓		L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
Waste Action Plan for a Circular Economy 2020	✓	✓	✓	✓		✓		✓	✓		H
Healthy Cities Project (WHO)		✓			✓						H
National Peatlands Strategy 2015-2025	✓	✓	✓	✓				✓			L
CAP Strategic Plan 2023-2027	✓	✓	✓								H
National Development Plan 2021-2030	✓	✓						✓			H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
Biodiversity – Climate Change Sectoral Adaptation Plan	✓		✓	✓							L
All-Ireland Pollinator Plan		✓		✓				✓			L
Ireland’s 4 th National Biodiversity Action Plan 2023-2030			✓	✓							H
Town Centre First: A Policy for Irish Towns (published 2023)		✓	✓			✓					L
Tourism Sectoral Adaptation Plan 2025-2030		✓	✓								L

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
People, Place and Policy- Growing Tourism to 2025		✓										L
National Outdoor Recreation Strategy 2023-2027	✓	✓		✓								L
Fáilte Ireland Visitor Experience Development Plans		✓										L
Fáilte Ireland's Tourism Strategy		✓										L
EPA Drinking Water Advice Note No. 8: Developing Drinking Water Safety Plans (2013)	✓	✓										H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Food Wise 2025		✓	✓									L
Food Vision 2030		✓	✓									L
Project Ireland 2020: National Marine Planning Framework	✓	✓	✓	✓		✓	✓		✓	✓		H
Sixth Nitrates Action Programme (2026-2028)	✓	✓	✓	✓								H
Water Action Plan 2024	✓	✓	✓	✓								H
State of the Environment Report 2024 (EPA)	✓	✓	✓	✓				✓	✓	✓		H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Grid Implementation Plan 2023-2028 (Eirgrid)		✓										L
Climate Action Plan 2025	✓	✓	✓					✓				H
Strategic Funding Plan 2025-2029 (Uisce Éireann)		✓										L
Water Services Policy Statement 2024-2030 (Uisce Éireann)	✓	✓	✓									H
Project Ireland 2040: National Planning Framework	✓	✓	✓					✓	✓			H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
National Strategic Plan for Sustainable Aquaculture Development 2030	✓											L
Water Services Strategic Plan 2050 (Uisce Éireann)	✓	✓										H
National Water Resources Plan (Uisce Éireann)	✓	✓										H
Catchment Flood Risk Management (CFRAM) Programme (OPW)	✓	✓	✓	✓	✓	✓	✓	✓				H
Regional and Local												

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1	
Regional Spatial and Economic Strategy (RSES) for the Northern and Western Assembly	✓	✓	✓	✓		✓	✓	✓			H
Wild Atlantic Way Regional Tourism Development Strategy	✓	✓									L
Galway County Development Plan 2022-2028	✓	✓	✓	✓		✓	✓	✓			H
Galway City Development Plan 2023 - 2029	✓	✓	✓	✓		✓	✓	✓			H
Galway County Climate Action Plan 2024 - 2029	✓	✓	✓	✓							H

International, National, and Regional Legislation and Policy/Plans/Programmes/Strategies	SEA Topics										Relevance to the Draft GWS SEA - Direct /higher relevance- H Indirect relevance - L	
	W1	P1	C1	B1	M1	L1	H1	G1	A1	N1		
Galway Local Economic and Community Framework Plan 2024 - 2029		✓										H
Galway County Heritage and Biodiversity Plan 2024-2030	✓	✓	✓	✓			✓					H
Galway City heritage Plan 2025-2030		✓				✓	✓					H
Galway City Noise Action Plan 2024-2028										✓		H
Galway City Biodiversity Action Plan 2014-2024	✓	✓	✓	✓			✓					H

